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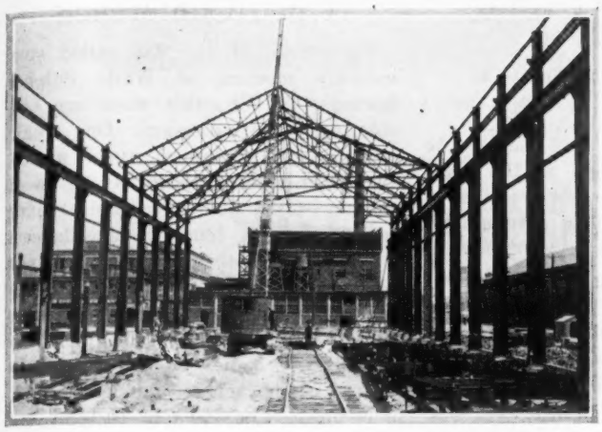


Fig. 1—Oxyacetylene welded building during erection. A 75-foot welded truss is being raised into position

Fabricates Steel Frame Building by Gas Welding

Niagara Falls Research Building Is Completely Oxyacetylene Welded Both in Shop and Field—First of Type To Be So Constructed

ABOUT 110 structural engineers and municipal building commissioners spent June 19 in Niagara Falls, N. Y., inspecting the steel framework of a building fabricated and erected by oxyacetylene welding. This building, which is being built by the Union Carbide & Carbon Research Laboratories Inc. in the plant of the Union Carbide Co., is believed to be the largest so constructed. The visiting engineers were guests of the Linde Air Products Co., New York, which had been placed in complete charge of all welding operations in both the shop and the field.

The building is a mill type having a single aisle 75 feet wide, 260 feet long and arranged in thirteen 20-foot bays, and approximately 42 feet 5 inches to the lower chord of the trusses. Mezzanine operating floors extend along one side of the building, single stage in bays 1 to 11 and three stage in bays 12 and 13. These floors are 27 feet wide and 11 feet, 9 feet 6 inches and 9 feet 6 inches, respectively, in vertical elevation. The main and first mezzanine floors are served by a full span 10-ton traveling crane.

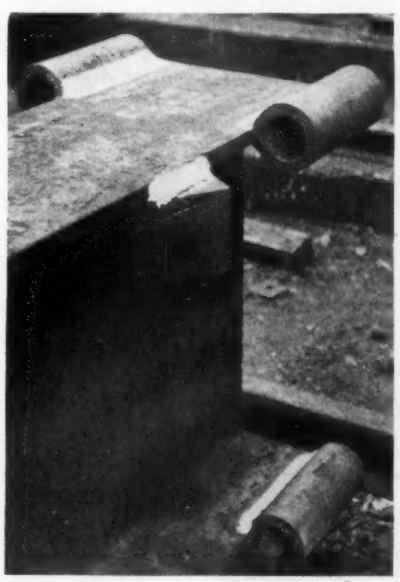


Fig. 2—Sections of double extra heavy pipe welded to base of column form effective anchorage. Welds are painted white to show location

For the structure 297 tons of structural steel were required. The side envelope will be of common brick and steel sash and the roof of 18-gage galvanized copper-bearing steel supported by 8-inch channel purlins. The building is unattached and will be used exclusively for research purposes. Designs for welded construction were developed by the American Bridge Co., assisted by the development section of the Linde company. Welders without previous experience in structural welding were engaged and qualified for the work in accordance with tests recommended by the American Welding society code. Erection was under the direction of George C. Holcomb, Buffalo and

Forestville, N. Y. Regular shapes were used and usual procedure followed in erection. Welding was carried out according to the recently promulgated structural welding code prepared by the Welding society. In general, welds are of the lap and fillet type, except that combination butt and fillet joints are used for the heel and ridge joints of trusses and for the anchorage details of principal columns.

The 75-foot x 19-foot trusses are of the modified compound Fink type, having principal compression struts normal to the lower chord. These were welded in the shop in two sections to bring them within shipping limits, and welded at the middle in the field. Trusses are designed to sustain, in addition to the dead load, a snow load of 25 pounds per square foot, a wind load of 15 pounds per square foot applied normal to top chord and three concentrated loads of 2000 pounds each at the center and two principal joints of the truss, calculated as hoisting loads.

A stress of 16,000 pounds per square inch governs for base metal, and 11,300 pounds per square inch for shear and 15,000 pounds per square inch for compression through net throat of fillet and butt welds. All welding was done with oxweld No. 1 high test rod which produces a weld metal of 58,000 to 60,000 pounds per square inch tensile strength, yield point 40,000 to 42,000 pounds per square inch, and elongation of approximately 25 per cent by the Miller bend test.

A striking feature of the construction is the anchorage for the columns. As shown by Fig. 2 this was effected by means of double extra heavy pipe lugs, double fillet welded to the edges of the column flanges, through which the anchor bolts were passed and secured by nuts. One-half inch round

Fig. 3—Detail of welded truss

washers were used to seat the nuts to the upper milled edge of the lugs. This type of construction was tested thoroughly and found to give abundant strength in shear.

In the fabricating shop, trusses were assembled in jigs secured to welding skits to which members were clamped prior to welding. Shop welding was started April 1 and finished May 15. The job progressed with good speed as soon as welders became familiar with this type of work. Steel was delivered on June 1 and it is expected that field welding will be finished by July 6.

Total amount of welding, taken from the drawings, is as follows:

Size of weld, inches	Type of weld	Amount, feet
5/8	fillet	2483
5/8	fillet	334
5/8	open butt	69
5/8	single vee butt	35

Roughly speaking, three-fourths of the welding was performed in the shop and one-fourth in the field. Ten welders were engaged in the shop work and three in the field work.

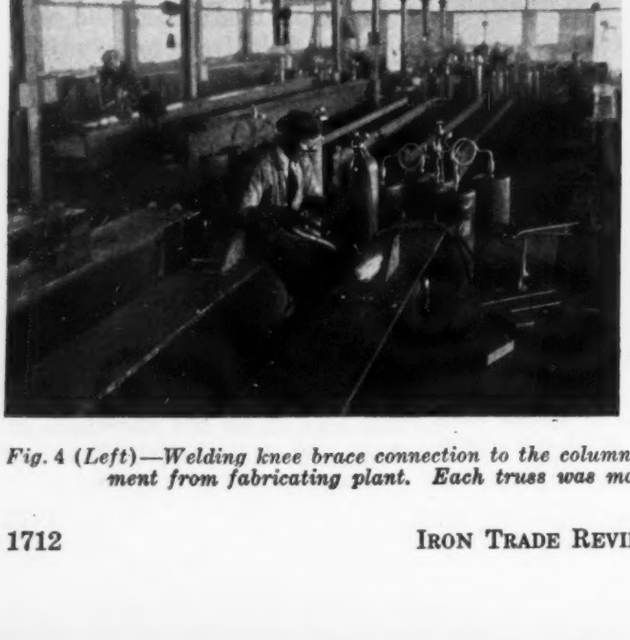
This building is the first of a series of oxyacetylene welded building structures in contemplation for construction under the direction of the development section of the Linde Air Products Co. This type of building was selected for the initial project because it contained a miscellany of structural joints and offered opportunity for a more general application of structural welding than would have been obtained in a pure multi-story type of structure.

Flat Rolled Executives Open Conference

Executives of the flat rolled steel industry meeting at White Sulphur Springs, W. Va., this week are considering trade extension. One speaker gave the potential rural market for sheet steel products as 30 to 40 million tons of galvanized roofing and 27 million tons of miscellaneous products. Another described a new one-piece autobody designed for Dodge made of four parts, reducing the number of pieces from 500 to 120. Use of all-steel bodies by automotive industry would increase tonnage by 370,000 tons. Considerable thought was given to advertising campaigns.

At a banquet Monday evening Severn P. Ker, president, Sharon Steel Hoop Co., emphasized the disgraceful lack of profits in the last five years in spite of the record tonnage and questioned sales methods practiced today. W. E. Humphrey, federal trade commissioner, Washington, reported that more had been accomplished by the commission in the past year than in previous history. He reviewed the trade practice conference method and urged public co-operation against fraudulent advertising.

According to Mr. Humphrey, the commission receives 45 complaints of unfair practice monthly, but over 90 per cent cease and desist without court action.



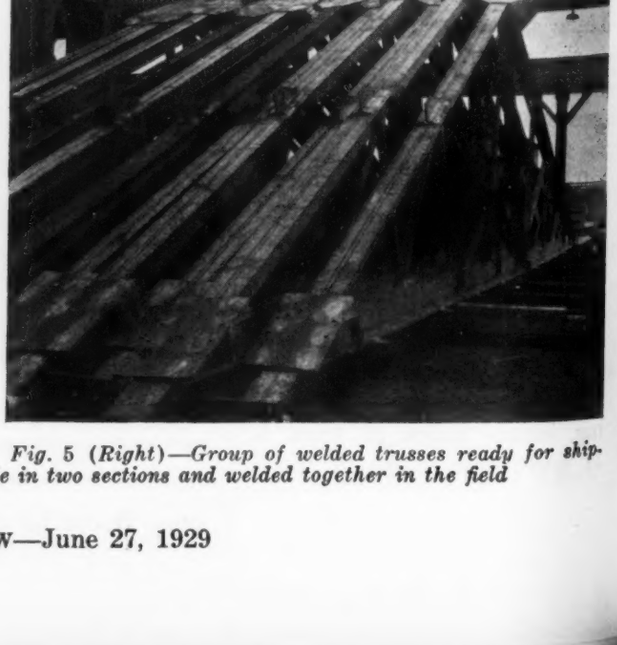


Fig. 4 (Left)—Welding knee brace connection to the column. Fig. 5 (Right)—Group of welded trusses ready for shipment from fabricating plant. Each truss was made in two sections and welded together in the field

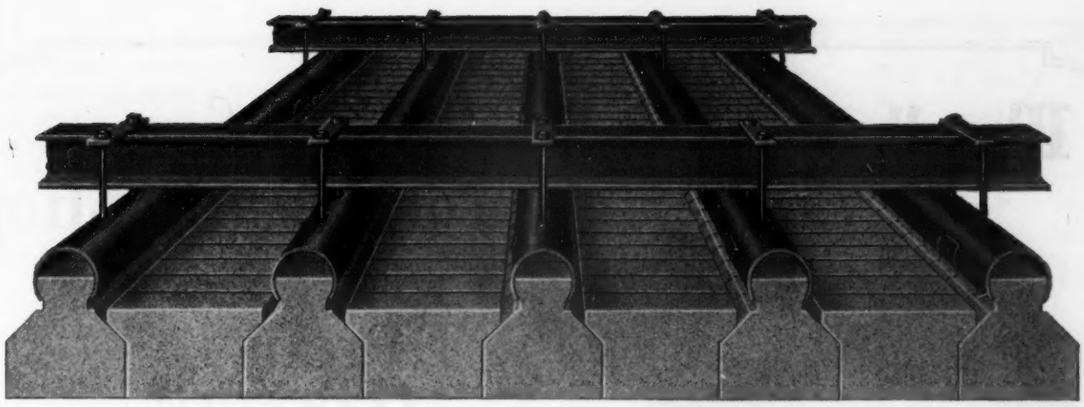


Fig. 1—Suspended roof design showing method of supporting "hanger" and "filler" tiles from slotted pipe and cross I-beams

Tiles Suspended from Pipes in New Furnace Roof Construction

A UNIQUE method of suspended roof and sectionally supported sidewall construction for boilers, kilns and industrial furnaces has been developed by the Standard Arch Co., Frostburg, Md. Specially designed refractory brick form the basis of the design.

A 6-inch slotted pipe constitutes the primary suspending member in the flat suspended roof construction. The necks of the "hanger" tile are inserted into this pipe through the cut-outs which occur at regular intervals on each side of the pipe. The pipe itself is hung by adjustable U-bolts, approximately 60 inches apart, from the overhead I-beam construction. Intermediate tile or "fillers" are supported between the two rows of hanger tile, converging shoulders of the fillers resting on the diverging shoulders of the hangers, as shown in Fig. 1. Tie-rods and skewbacks are eliminated.

Space within the pipe above the neck of the hanger tile, cut-out slots and the holes provided for U-bolts, afford free circulation of air throughout the entire length of the pipe. Open overhead steel construction permits adequate external ventilation.

Longitudinal thermal expansion of the refractory tile is absorbed by the movement of the tile along the smooth inner surface of the pipe. The semicircular design of the tile neck allows a free pendulum movement and the plate on top of the I-beam will slide in either direction to relieve lateral expansion pressure. Wherever necessary, special expansion joints are provided.

Practically the same methods have been applied to the design of sectionally supported sidewalls. The 6-inch slotted pipe acts as the primary supporting unit. Load plates provide sectional support, as shown in Fig. 2. By this means cumulative loading of the tile is lessened and localization of repairs and replacements is made possible. Provision is made for thermal expansion by packed slip joints. Vertical or horizontal air lanes are constructed by means of an arrangement of H-beams and a secondary wall.

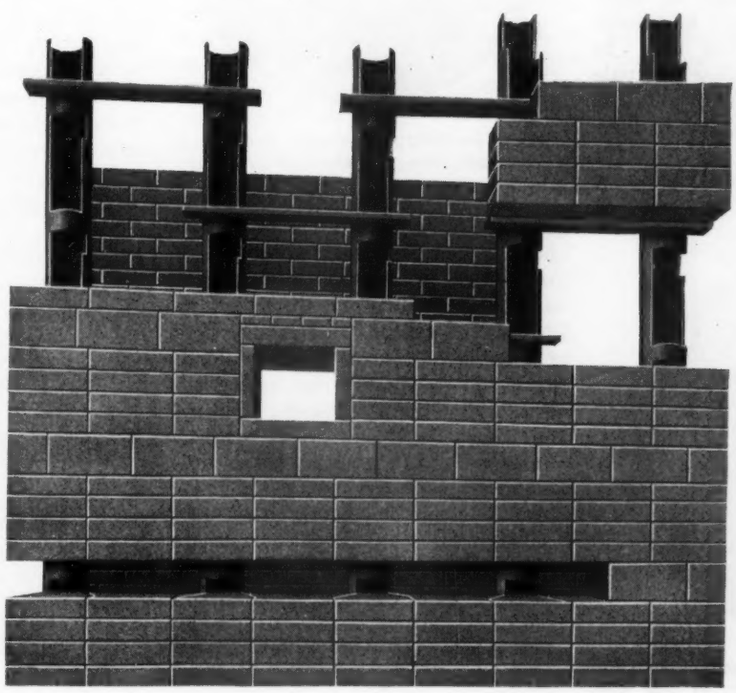
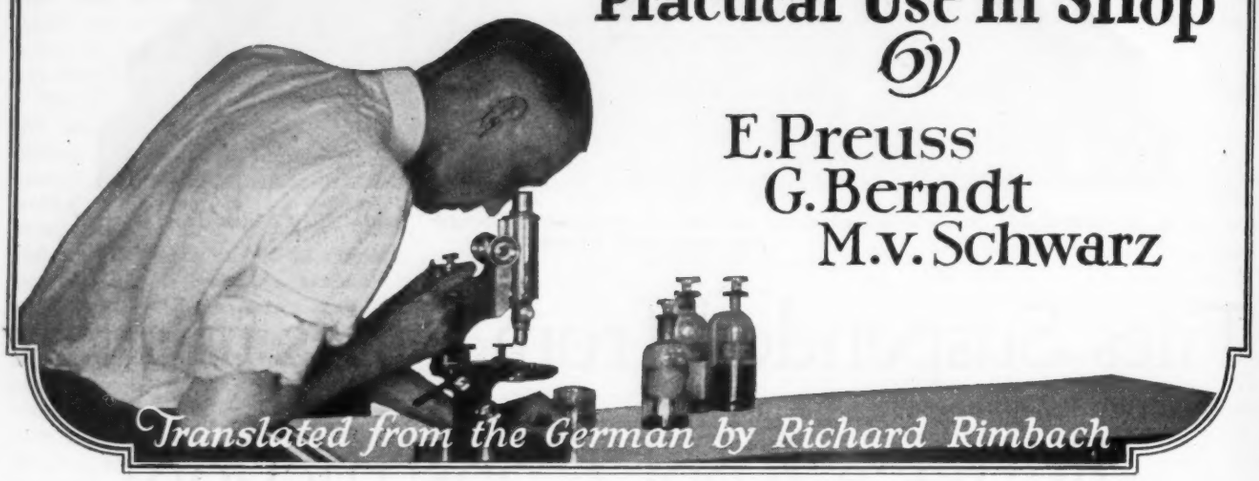


Fig. 2—Method of sectional sidewall support with load plates inserted to prevent cumulative loading

Complicated furnace contours such as a nose construction are accomplished with the standard material, the slotted pipe being bent or welded to the desired radius.

The shape of the refractory tile used on curved surfaces is altered somewhat from the standard shapes. It is made with a slight taper, being wider at the base than at the neck. For use on sloping surfaces hanger tiles have been designed to hang in a vertical position, eliminating load thrust.

Metallography Simplified for Practical Use In Shop



By

E. Preuss
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M. v. Schwarz

Translated from the German by Richard Rimbach

Chap. XIII—Inclusions, Slags and Welding Seams

INCLUSIONS in steel often have their origin in the sulphur content which is bound to the iron either in the form of iron sulphide, or as manganese sulphide to the manganese which was added after decarburization to improve the physical properties. The sulphide inclusions in soft steel generally have a round or drop shape in material which has been cold-rolled. They may be elongated also and even broken in several places, as indicated in Fig. 214. In color they are pale yellow to pale blue and usually appear bright and mirror-like after polishing due to their hardness.

The nonmetallic inclusions are found more easily on the unetched ground sections than on the etched ones. By special etching agent such as an alcoholic solution of nitric acid, a dark etching halo may occur around the slag inclusions, particularly those of a sulphide nature, so that even the finest slag inclusions can be detected easily with the microscope. In soft steel slag inclusions which are not sulphides often have the same or a similar appearance but in doubtful cases they can be distinguished from sulphide inclusions by the sulphur printing method described in Chap. I.

Fig. 214 Sulphide inclusions (a and b) in longitudinal section of low carbon steel. Etched microscopically. X 70 (O. Koehnke)

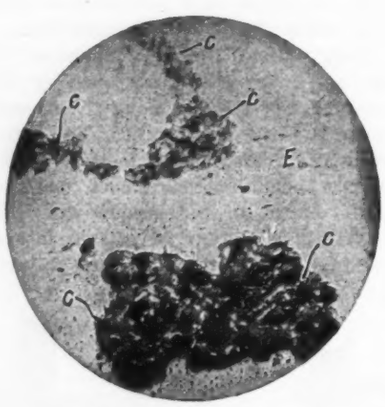

Fig. 215—Slag in cross section of wrought iron, polished only. X 65

Oxides also can be considered as inclusions. These occur with incomplete deoxidization or in burned steel, as shown in Fig. 172 in Chap. XI. They can be detected by the fact that they disappear during annealing or reduction in a current of hydrogen. Similarly, the nitrogen absorbed at high temperature forms with iron a compound known as iron nitride, which is noticeable in the inside of crystals as dark lines. These lines are shown in Fig. 218, which represents a section taken from a boiler plate containing nitrogen. The danger of nitride formation arises especially when welding with the electric arc where the nitrogen contents, according to B. Strauss,[71] can be up to 0.12 per cent while with oxyacetylene or oxyhydrogen welding it usually is found to be considerably less or about 0.02 per cent.

The inclusions occurring in carbon steel, in general, are different from

[71] B. Strauss, *Stahl und Eisen*, Vol. 34, Page 1814, 1914.

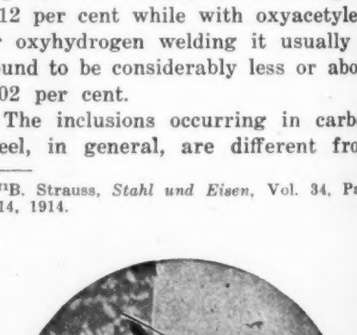

Fig. 216—Cross section showing large slag inclusions in wrought iron

those slags which occur in wrought iron. The slags consist almost always, at least if there are larger occlusions of tap cinder, of two different parts, that is, a dark ground mass and smaller lighter spots which lie within the ground mass as shown in Figs. 215 and 216, where the slag inclusions *C* are imbedded in the white appearing in the lighter material *E*. In Fig. 216, the small light spots have a pronounced pine needle-like arrangement. It still should be mentioned that the dark spots at *d* are not slags but holes from which the brittle slag has been torn out in grinding. An iron with large inclusions must be considered inferior because of its poor physical properties. According to their chemical composition, the tap cinders are mostly silicate slags. Those occurring in steel, however, are mostly of a sulphide nature. This easily can be proved by the Baumann sulphur print method. Wrought iron which has been made from soft steel, as described in Chap. II, also shows many sulphur slags.

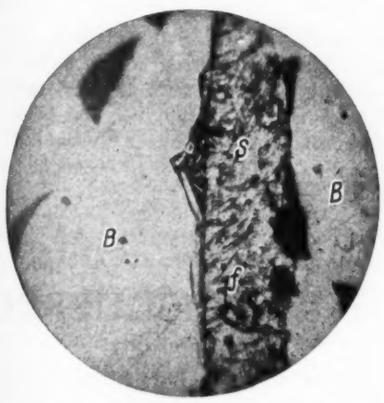

Fig. 217—Steel chip mounted in bronze. Etched microscopically. X 44

Due to the greatly differing appearance of inclusions it is possible to determine whether material is steel or wrought iron, in addition to the previously described examination and even if only small samples of the material such as chips are available for examination. An example of this is illustrated by Fig. 217 which shows a piece of aluminum sheet into the surface of which numerous small iron slivers were rolled. It was to be determined whether these slivers originated from the chill cast roll, or if they were chips of a malleable iron-carbon alloy which had been deliberately thrown between the rolls. For examination the fine chips *S* only a few tenths of a millimeter long, were held in a piece of bronze *B*. After the microscopic etching with alcoholic nitric acid, the structure recognizable from Fig. 217 and consisting of ferrite and pearlite, became visible which proved that it was a low-carbon steel. Further, the individual crystals showed a fairly strong distortion which pointed to the fact that they were chips which had undergone considerable deforming in cutting. Also, at *f* a colored inclusion could be seen which allows, according to what has been said before, recognizing the chip as carbon steel since it is a sulphide slag inclusion.

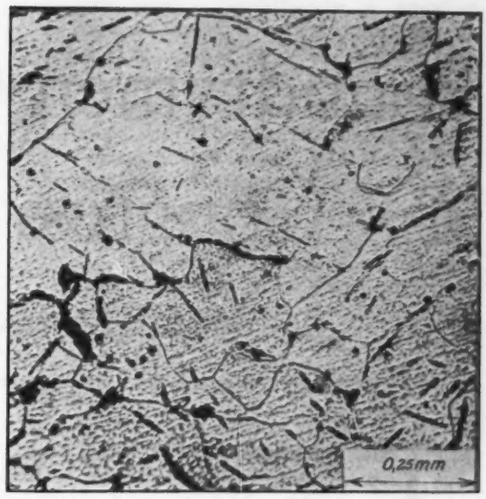

Fig. 218—Cleavages in the interior of ferrite crystals of a high nitrogen steel boiler plate. Etched microscopically. X 80. (C. Bach and R. Baumann)

Congress Draws Variety of Technical Papers

A wide range of engineering subjects, covering the outstanding industrial and engineering developments in the United States, will be reviewed in the 80 scientific papers prepared by American engineers for presentation at the World Engineering congress, opening in Tokio, Japan, Oct. 30. Included in the contributions to the congress are papers on metallurgy, structural engineering, and construction of bridges and tunnels.

Among the contributors are: Dr. Elmer A. Sperry, inventor of the gyroscope, and chairman of the American committee in charge of arrangements; Ralph Modjeski, bridge engineer; Dr. George Otis Smith, director, United States geological survey; H. F. Moore, research professor of engineering materials, University of Illinois, who will give a paper on "The Development of the Science of Structural Materials," and C. K. Leith, University of Wisconsin, who has prepared a paper on "The World's Iron Ore Supply."

Technical sessions are scheduled for the first week of the meeting, beginning Nov. 1. Present registration for the American delegation now reaches 250 engineers and their families. They will sail from San Francisco on two special ships Oct. 10.

Tests Plates in Rolling

A bulletin, "Rolling Tests of Plates," by Wilbur M. Wilson, just has been issued by the engineering experiment station of the University of Illinois. The object of the investigation was to study the flow of metal in a plate rolled under a loaded cylinder in order to obtain information which would be of value in the design of rolling bascule bridges where the segmental and track girders are faced with sole plates having solid rectangular sections. The working load for these sole plates should be a function of the minimum load that will produce permanent deformation. Tests were planned to determine this minimum load. Copies of bulletin No. 191 may be obtained without charge from the engineering experiment station, Urbana, Ill.

British Plan Meeting

Arrangements are being made for the autumn meeting of the British Iron and Steel institute at Newcastle-Upon-Tyne, England, Sept. 10-13. General meetings will be held each day at Festival Hall of the North East Coast exhibition, and plant visits will be made to the principal works of Tyneside and Tees-side, including colleries and coke oven plants. G. C. Lloyd, 28, Victoria street, London, S. W. I., is secretary of the institute.

Midland Steel Products Co., Cleveland, claims its new research laboratory has saved the automobile industry $375,000 in two months.

Foundrymen Conduct International Congress in Great Britain

Eleven Countries Are Represented in Third Triennial Convention of World's Foundry Leaders in London—Next Meeting in Dusseldorf in 1932

THAT earnestness with which foundrymen of the world are facing problems of production, the zeal with which the technical branches of the industry are pursuing metallurgical science, and the sturdy spirit of co-operation which is peculiar to the foundry world and which knows no national boundaries, were exemplified in all the sessions of the third International Foundrymen's congress in London, June 11-15. The cordial hospitality of the Institute of British Foundrymen and the respect in which that organization is held in its native land were exemplified in every function. The opening meeting held in the grand council chamber of the Guildhall of London represented a distinct compliment to the institute and to the foundrymen from many lands.

The technical sessions were characterized by lively and timely discussion. Those papers which had been prepared in advance were amplified and their points supported or argued upon by carefully-prepared written discussions.

The arrangements made by the local branches of the institute provided many interesting plant visitations, and their hospitality, coupled with that of the Foundry Trades' Equipment and Supplies Association Ltd., and the conference committee, provided many features unexcelled in previous international gatherings of foundrymen.

Methods for Testing Cast Iron Are Discussed

WITH the congress formally opened on June 11, a gold medal was presented to Prof. Thomas Turner, Birmingham university, in recognition, on his retirement, of his unusually distinguished achievements on behalf of the foundry industry. The Oliver Stubbs gold medal, awarded annually by the Institute of British Foundrymen, was bestowed on President Wesley Lambert. Seated on the rostrum were the presidents or representatives of foundrymen's associations of 11 countries.

In a masterly address, President Lambert traced the evolution of the foundry industry during the past several decades in Great Britain, France, Germany, Belgium, Italy, Spain, United States and other countries.

The report of the test bar committee of the Institute of British Foundrymen was presented by Chairman John Shaw. This report explained the British position toward shear tests made from samples trepanned from the casting by means of a hollow drill. The committee being of the opinion that no constant ratio exists between the shear test value and the tensile test value of the cast irons of commerce, it is suggested that the adoption of the proposed Fremont shear test for commercial specifications be deferred in Great Britain.

Owing to the absence of J. W. Bolton, Lunkenheimer Co., Cincinnati, author of the American exchange paper, "Some Inter-relationships in Gray Iron Metallurgy," the paper was presented by Dan M. Avey, vice chairman of the papers committee of the American Foundrymen's association. Opening the discussion, R. S. MacPherraon, Allis-Chalmers Mfg. Co., Milwaukee, pointed out that Mr. Bolton's paper constitutes an important progress report on a problem which metallurgical leaders in the American foundry industry now are working on for the purpose, if possible, of establishing a definite correlation between the test bar and the casting it is supposed to represent. This was further emphasized by R. F. Harrington, Hunt-Spiller Mfg. Corp., Boston.

Opening the discussion for members of the Institute of British Foundrymen, Prof. Thomas Turner said that the paper reflects the considerable advance which Mr. Bolton has made toward the solution of the problem of correlating the bulk and surface of castings. E. V. Ronceray, Bonvillain et Ronceray, Choisy-le-Roi, near Paris, said that Mr. Bolton's work appears to confirm the usefulness of the Fremont-Portevin methods of testing, using a test piece taken from the casting itself.

Two simultaneous sessions marked the opening of the technical portion of the congress, on June 12. One of these was devoted to ferrous metallurgy and the other to nonferrous foundry practice. At the session on ferrous metals, a paper by Prof. E. Dipschlag, Institut an der Technischen Hochschule, Breslau, Germany, was read by the author. This paper dealt with the influence of graphite in pig

Use Old Guildhall for Reception

THE city of London showed exceptional courtesies to the foreign delegates in permitting the use of the ancient Guildhall for a reception on Tuesday afternoon, June 11. The reception was at the invitation of Sir John Dewrance, who assisted in receiving by President and Mrs. Wesley Lambert. More than 300 members of the overseas delegation and of the Institute of British Foundrymen were present.

iron on the resultant properties of castings. The paper presented on behalf of the Polish foundrymen's association by K. Gierdziejewski was read in abstract.

The next group of three papers referred to the effects of the chromium, manganese and nickel upon cast iron. In his paper on "The Influence of Chromium in Cast Iron," J. W. Donaldson, Scott's Shipbuilding & Engineering Co. Ltd., Greenock, held that chromium up to 0.9 per cent increases the stability of the combined carbon at temperatures up to 550 degrees Cent. A. L. Norbury, Birmingham, presented some interesting considerations on the influence of manganese on gray iron. He held that lowering the manganese content below 0.3 per cent is equivalent to introducing a hard brittle constituent, but the tensile and transverse strengths are not affected in pearlitic irons. Arthur B. Everest, Bureau of Information on Nickels Ltd., London, stated that the action of nickel leads to material improvement in the production of high-quality cast iron, and expedites machining operations.

In the discussion which followed the group of papers on the effects of alloys of nickel, manganese and chromium, a few differences of opinion were developed. H. Field, Wolverhampton, questioned whether the application of nickel is not perhaps limited to high-silicon irons. With reference to the influence of manganese, Mr. Field believes that the shrinkage varies greatly under influence of manganese, depending upon other factors in the analysis of the iron.

Value of Nickel Is Seen

R. F. Harrington said that nickel in many instances is valuable, in that it promotes uniformity of structure and permits the use of fewer mixtures for a great variety of castings. However, he does not believe that nickel is a cure-all for all difficulties. John Shaw, Southsea, stated that over 0.4 per cent manganese produces a chill. H. J. Young, London, questioned whether it was necessary to have manganese greater than 0.2 per cent higher than that necessary to produce manganese-sulphide. F. J. Cook commented that the ratio of the elements is the important factor for consideration. Mass also exerts an importation effect upon graphite action. Nickel reduces the chilling effect.

At the nonferrous session, A. H. Mundey, Fry's Meal Foundries Ltd., London, contributed a paper on "Die Castings." This paper gave a comprehensive description of the processes now used. Replying to a question as to the solubility of aluminum in cast iron pots, Mr. Mundey said that steel pots are used. Wesley Lambert mentioned a pressure die-casting machine which he recently had seen in Germany and which he briefly described as consisting of a rectangular box set over the pot of metal. The box is lowered into the metal bath and fills itself; it then is lifted and swung between two plates. Air is applied in the box and forces the metal out into the mold through an aperture in one of the plates.

Coarse Coal Dust Injurious

Keen interest in the practical problems of foundry practice was evidenced by a large attendance at the session June 13. The Belgian exchange paper on vocational training was read by title. Similarly the Dutch exchange paper on foundry molding sand, by H. Van Aarst, in the absence of the author also was presented by title. The third paper on coal dust as applied to molding practice, by Ben Hird, Upper Cwmbran, Wales, was presented in abstract by the author. Mr. Hird carried on some unusual experiments on the use of coal dust, varying the proportion of dust and the fineness of the grist in an attempt to induce common surface defects which are accredited to the use of this material in facing sand mixtures. He determined from his experience that pockmarks, slight surface indentations, are due to coarse coal dust, which, when the molten iron covers the surface of the mold, coke and swell, pressing into the soft film of iron on the casting face.

Ratching, a term applied to small eruptions on the casting-skin which require filing, or chipping, similarly is ascribed to coarse coal dust. Another defect, known as mapping, re-

(*Concluded on Page* 1720)

Foundrymen Renew Old Acquaintances

THE third annual reunion of the Club Lancastria, so designated from the name of the ship upon which a party of overseas foundrymen journeyed to America in 1926, *was held at Hotel Cecil, London, June* 11. *In addition to members of the club, a number of guests from among the American delegates attending the congress in London renewed old acquaintances. Those present included: From England—Frank Russell, W. B. Lake, William Jolley, A. C. Turner and Vincent Delport; from Scotland—Harry Winterton, W. D. Campbell, John Cameron and James W. Primrose; from France —E. V. Ronceray and H. Magdalenat; from Italy—Carlo Vanzetti and Antonio Galtarossa; from America—S. T. Johnston, S. Wells Utley, H. Cole Estep and D. M. Avey.*

British Foundry Institute Reports Progress

THE twenty-sixth annual meeting of the Institute of British Foundrymen was held June 10. The annual report stated the year has been one of steady progress.

Reference was made to the work of the British Cast Iron Research association, whose activities have progressed on normal lines during the year. The work done during the year has carried a number of developments a stage further from the purely metallurgical side, and several advances of great interest have been made. One of these, dealing with the influence of manganese in relation to sulphur was on the program of the international congress in the form of a paper by Dr. A. L. Norbury. Other developments refer to relationships between structure and composition, alloy cast irons, heat resisting irons and malleable iron. Work on molding sands has reached a point at which particulars have been placed before members of simple foundry control tests, which will enable sand conditions to be related to troubles experienced, and to enable a minimum of new sand to be employed consistent with safety. Developments of an important character with respect to the cupola also have been made by J. E. Fletcher.

Wesley Lambert, chief metallurgist, J. Stone & Co. Ltd., London, was elected president of the institute. F. P. Wilson, foundry manager, Pease & Patners Ltd., Middlesbrough, was elected senior vice president; and A. Harley, foundry manager, Daimler Co. Ltd., Coventry, was elected junior vice president.

Electrical Engineers of Iron and Steel Industry Convene

Twenty-fifth Annual Meeting of Association at Pittsburgh Replete with Interesting Papers and Discussions

Development of Electric Main Roll Drive is Among Important Topics Discussed at the Technical Sessions

RECORD progress in electric main roll drive installations last year, and latest developments in electrical, combustion and safety engineering practices in the iron and steel industry were described at the twenty-fifth annual convention of the Association of Iron and Steel Electrical Engineers, held June 17-21 in the William Penn hotel, Pittsburgh.

Technical sessions were conducted during the five days of the meeting and covered a variety of topics. The exposition conducted in connection with the convention attracted a record attendance. A large number participated in the inspection trip held Thursday afternoon to the Aliquippa, Pa., plant of the Jones & Laughlin Steel Corp. An informal reception Monday evening and a formal reception and dinner dance on Thursday evening were the main social events of the week.

Use of Electric Mill Drives Gains in 1928

INSTALLATIONS of electric drives on mills during 1928 reached a new high peak, it was stated in the annual report of the electrical development committee at one of the technical sessions. Installations last year numbered 171, a gain of nearly 70 over the preceding year. At the present time, it was pointed out, over 1600 electrically-driven main rolls are operating in the steel industry, on which are installed motors of more than 2,000,000 combined horsepower. The largest increase in horsepower installed on main rolls last year was on strip mills. Forty-two motors were installed, representing over 50,000 horsepower and of this number all but four were direct current.

"As the type of mill required to supply the demand for steel is changing, so the type of motor used is also changing," it was stated. "A survey of the installations made reveals the fact that 58 per cent of all the motors installed last year were direct-current motors and 42 per cent were alternating current. It is also worthy of note that 23 per cent of these were synchronous motors, 38 of this type representing a total of over 47,000 horsepower were installed last year. In 1913, a 500-horsepower synchronous motor was installed on a sizing mill. No others were installed until 1924 and since that time 82 motors of this design have been installed, representing over 100,000 horsepower. Synchronous motors are being used on bar and billet mills, rod mills, merchant mills, strip mills and rail mills. The use of direct-current motors is increasing continually and no doubt will, as long as our mill practice requires individual motors on each roll stand."

Main roll drives installed on reversing blooming mills last year totaled the third highest horsepower in history; on bar and billet mills the horsepower was fourth highest; on sheet, bar and skelp mills the horsepower was exceeded in 1924, 1925 and 1926. On merchant mills, the horsepower was exceeded in 1925 and approximated in 1916.

Other installations of last year described included that of a rolling mill for forming slabs into motor and generator frames from 30 inches to 40 feet in diameter; turbines; generators; transformers; gas electric, electric and oil electric locomotives; cranes; electric control, insulators and miscellaneous equipment.

A brief description was given of a special ingot handling conveyor now under construction and which incorporates some features new in the steel industry. A special crane handles four ingots at one time, conveying them from the stripper crane to one end of the conveyor. The conveyor is built up of cast steel ingot cars, coupled together. Each car is equipped with two pots for receiving the ingots. The conveyor has a total of 258 cars and 516 pots. One variable-speed motor is located at each end, only one being used at a time, however. This conveyor runs in front of the soaking pits in a continuous slow movement. Three

New Officers

ASSOCIATION OF IRON AND STEEL ELECTRICAL ENGINEERS

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Republic Iron & Steel Co., Youngstown, O.

First Vice President
R. M. HUSSEY
Jones & Laughlin Steel Corp., Aliquippa, Pa.

Second Vice President
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Managing Director
JOHN F. KELLY
Empire building, Pittsburgh

cranes handle the charging of the ingots from the conveyor to the soaking pits, all of these motions being performed while the conveyor is in motion. One of the outstanding advantages claimed for this process is the reduction in loss of heat between the stripping of ingots and placing of them in the pits.

Considerable progress in the use of fusion welding in the steel industry was reported by the electric welding committee. "The use of fusion welding in the steel industry has advanced with phenomenal rapidity within the past few years, including arc welding, resistance welding, flash welding with gas welding and the thermit process taking their share of the development," it was stated. "At the present time electric metallic arc welding seems to be most commonly used in general repairs and manufacturing processes where a variety of operations must be performed with the same tool. Thermit still holds an unassailable position where large portions of metal must be replaced and where cast iron is to be repaired. Gas welding appears to best fit thin material and where an exceptionally smooth finish is required, its competitor in this field being the atomic hydrogen arc, which has the disadvantage of being a little less flexible than the gas torch for hand welding."

A tendency toward greater use of blast furnace gas for purposes other than generation of electric power with a consequent increase in purchase of power was predicted by G. E. Stoltz, manager engineering department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in his paper on "Some Methods of Best Utilizing Electrification in the Steel Industry." This paper recommended 60-cycle installations as more economical than 25 cycles. Increased production of alloy steels and additional electric furnace installations also was foreseen.

William Penn hotel, Pittsburgh, where Association of Iron and Steel Electrical Engineers conducted its annual convention and exposition

Increased realization of the value of gas as a fuel was described as the greatest development in the subject of general gas use, according to the report of the gas utilization committee, of which Walter N. Flanagan, Carnegie Steel Co., Pittsburgh, is chairman. "Analysis of values have shown that blast furnace gas has a far higher value as a metallurgical fuel than as a boiler fuel," it was stated. In some instances it is worth twice as much for metallurgical purposes, even when enrichment is required. The mixing of gases of different calorific values and the utilization of blast furnace gas have been greatly facilitated by the development of control devices and recuperators, and by the decrease in the cost of effective gas cleaning.

Considerable interest was evidenced in the report on "Application of Pulverized Fuel in Industrial Furnaces," by W. O. Renkin, Combustion Engineering Corp., New York. This paper discussed the improvement in production and costs obtained on open-hearth and heating furnaces through the substitution of pulverized coal firing for oil and certain gaseous fuels, in instances where by-product coke oven gas is not available. The subject also involved a discussion of furnace construction.

Steel Mill Electrical Equipment Exhibited

EXHIBITS of nearly 140 manufacturers and distributors of electrical and miscellaneous equipment for steel mill use were on display at the iron and steel exposition held at the William Penn hotel in connection with the convention. The basement and seventeenth floors were given over to the exposition which attracted a record attendance and created much interest.

Electrical equipment predominated in the exhibits, although a number of builders of cranes, heavy mill machinery, electric trucks and antifriction bearings conducted booths. Electric motor manufacturers represented included: General Electric Co., Schenectady, N. Y.; Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; Reliance Electric & Engineering Co., Cleveland; Allis-Chalmers Mfg. Co., Milwaukee; Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.; Lincoln Electric Co., Cleveland; Electric Machinery Mfg. Co., Minneapolis; Century Electric Co., St. Louis; Tippins & Sprengle Inc., Pittsburgh; and Fairbanks-Morse & Co., Chicago.

Westinghouse exhibit also included a crane hoist controller; a new 600-ampere, 15,000-volt, indoor circuit breaker; welding equipment and gear reduction units manufactured by the R. D. Nuttall Co. division. General Electric Co. also showed a variety of motor control and circuit breakers. The Reliance company exhibited various sizes of general purpose, direct and alternating-current motors, featuring the totally-enclosed self-ventilated type. The Lincoln company displayed welding units as well as motors.

Models Placed on Display

Mesta Machine Co., Pittsburgh, and Morgan Engineering Co., Alliance, O., were represented, the latter by models of a 54-inch two-high blooming mill installed at the Lackawanna plant of the Bethlehem Steel Co., a one-piece trolley frame, ladle crane, ingot stripper, a soaking pit crane, and also by an open-hearth floor charger.

Bearing manufacturers who conducted exhibits included the Fafnir Bearing Co., New Britain, Conn.; New Departure Mfg. Co., Bristol, Conn.; Norma Hoffmann Bearings Corp., Stamford, Conn.; Rollway Bearings Co. Inc., Syracuse, N. Y.; S K F Industries Inc., New York; Timken Roller Bearing Co., Canton, O.; Orange Roller Bearing Co., Orange, N. J.; and Hyatt Roller Bearing Co., Harrison, N. J.

Builders of cranes and hoists included the Cleveland Crane & Engineering Co., Wickliffe, O.; Reading Chain & Block Corp., Reading, Pa.; Yale & Towne Mfg. Co., Stamford, Conn.; and Shaw crane division of Manning, Maxwell & Moore Inc., New York. Material handling truck manufacturers were represented by Clark Tructractor Co., Battle Creek, Mich.; Atlas Car & Mfg. Co., Cleveland; Automatic Transportation Co., Buffalo; Baker-Raulang Co., Cleveland.

Refractories were exhibited by the

Kier Fire Brick Co., Pittsburgh, and the Babcock & Wilcox Co., New York. Blaw-Knox Co., Pittsburgh, had on display a water-cooled furnace door and hoist and a model of a regenerative air preheater. The M. H. Detrick Co., Chicago, showed a section of a soaking pit cover. The Shenango-Penn Mold Co., Pittsburgh, exhibited cast bronze tubing. Other casting producers represented were the Erie Malleable Iron Works, Erie, Pa.; Fort Pitt Steel Casting Co., McKeesport, Pa.; and the Ohio Steel Foundry Co., Springfield, O.; the Lebanon Steel Foundry, Lebanon, Pa.; and Michigan Steel Casting Co., Detroit.

Electric control equipment was displayed by a large number of manufacturers, including Cutler-Hammer Inc., Milwaukee; Electric Controller & Mfg. Co., Cleveland; Clark Controller Co., Cleveland; Ohio Electric & Controller Co., Cleveland; Rowan Controller Co., Baltimore; Trumbull Electric Mfg. Co., Plainville, Conn.; Monitor Controller Co., Baltimore; Union Electric Mfg. Co., Milwaukee; and the Sundh Electric Co., Newark, N. J. Roller-Smith Co., New York, and I-T-E Circuit Breaker Co., Philadelphia, exhibited circuit breakers.

Among other exhibitors were the Ajax Electrothermic Corp., Trenton, N. J.; Air Reduction Sales Co., New York; Aluminum Co. of America, Pittsburgh; Bartlett Hayward Co., Baltimore; Johns-Manville Inc., Manville, N. J.; E. J. Lavino & Co., Philadelphia; Bristol Co., Waterbury, Conn.; and Brown Instrument Co., Philadelphia.

Cast Iron Test Methods Are Discussed

(*Concluded from Page* 1717)

sults when an excess amount of fine, high-volatile coal dust is used in the facing sand.

W. J. Cook, Birmingham, in his discussion, questioned whether pockmarking resulted entirely from coal dust in the facing. He believes that an excess of binder, such as that which results when sand is sieved and then a portion is rubbed through the sieve, may produce spots, which swell and cause surface depressions. In the case of mapping, Mr. Cook holds that the mold surface breaks by contraction and not by expansion.

H. B. Hanley, Rochester, N. Y., ascribed pockmarks to balling up an excess of binder.

James M. Primrose, Falkirk, Scotland, advanced the question as to whether coal dust ever is advisable, since it reduces bond, which is desirable, forms gas, which is deleterious, and reduces permeability which is sought. S. H. Russell, Leicester, stated his belief that coking causes the troubles outlined by Mr. Hird. He has found that mapping may be the result of pressure of the metal forcing fins into sand in which the bond has been weakened.

A paper on "Application of Pulverized Coal to Metallurgical Furnaces" was read by E. C. Lowndes, co-author with H. W. Holland. This paper defined the two main divisions of powdered coal as the bin-and-feeder system of the direct-fired. It represented the advantages of the former method and the disadvantages of the latter. The examples cited in the paper concerned mainly the application of this fuel to the billet furnaces and to malleable iron practice.

Exchange Paper Presented

Of the two sessions held June 13, one was devoted almost entirely to a discussion on cast iron testing methods. This followed from the presentation of the exchange paper of the Association Technique de Fonderie de Paris entitled "Cast Iron Testing Methods," by M. Le Thomas and M. Bois, a paper by J. G. Pearce, director of the British Cast Iron Research association on "The Influence of Size of Section on the Strength of Gray Cast Iron," and a "Report on the Shear Test for Cast Iron," by the test bar committee of the Institute of British Foundrymen. These papers and the report dealt with the methods recommended by the respective test bar committees of the French and British technical associations. The French investigators recommended the shear test and the static-transverse test with the use of small test pieces trepanned from the casting itself, the method being known as the Fremont test. The British have adopted a standard specification defining the dimensions of three test bars cast from the same metal at the same time as the casting. One or the other of these test bars is used according to the thickness of the casting.

Expert investigators from Great Britain, France, Belgium and the United States contributed to the discussion, the underlying idea of which was that no test as yet answers the requirements of the industry.

A paper on "The Critical Examination of Steel Castings" was presented by G. F. Gillott, this paper being a communication from the research department, Woolwich. The author dealt with the examination of steel castings by X-ray apparatus, and with the macroscopic and microscopic examinations. He showed how flaws can be detected by radiographs, but pointed out that it is still more important to know the source of a defect, which can better be obtained by macrography, micrography, chemical analysis and hardness testing.

The banquet of the congress marked the climax of a long chain of interesting experiences for the delegates. More than 500 attended this function. In proposing the toast to the Institute of British Foundrymen and its president, Sir John Dewrance spoke of the influence of common scientific interest upon international peace. In his response, President Lambert spoke of the pre-eminent value of the interchange of information along technical lines.

F. W. Bridges & Sons Ltd., managers of the exhibition, tendered a luncheon to the overseas delegates to the International Foundry congress at the exhibition hall on June 13.

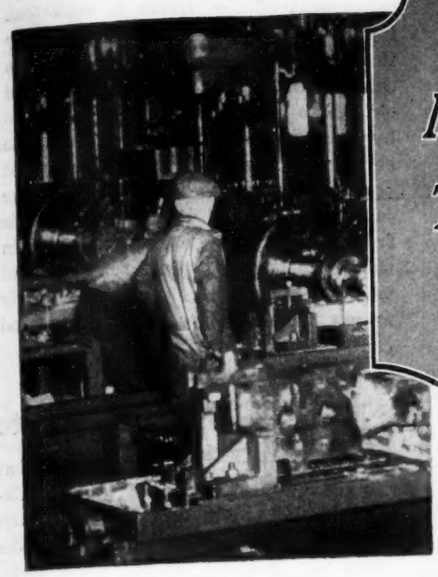
The Foundrymen's International committee, which consists of representatives of the leading foundry organizations of Europe and America, met June 11. A motion was passed stating that in the opinion of the committee every effort should continue to be made by the associations concerned to maintain and perpetuate the high quality of the international exchange papers, which now are a feature of many foundry conventions. It was agreed that the triennial international meetings should be officially designated "International Foundrymen's congress." The next one will be held in 1932 in Dusseldorf.

Carlo Vanzetti, representing the Italian foundrymen, was chosen president of the committee. It was agreed that the president of the Association Technique de Founderie de France in 1930 should be vice president of the committee. T. Makemson, was reelected secretary of the committee.

Coke Output Is Higher

May production of beehive coke was 597,400 net tons and of by-product coke 4,664,242 tons, a grand total of 5,261,642 tons, according to the United States bureau of mines. In April output of beehive coke was 467,700 tons and of by-product coke 4,456,944 tons, a total of 4,923,644 tons. In May, 1928, output of beehive coke was 376,000 tons and of by-product coke 4,099,864 tons, a total of 4,475,864 tons.

About 97 per cent of imports of fuel briquets are unloaded at Boston.



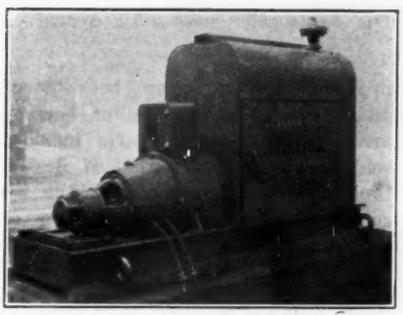
New Machine Tools and Shop Equipment

"Without tools man is nothing, with tools he is all."—Carlyle

Arc Welding Set Is Gas Engine Driven

No. 131

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., announces the development of a 300-ampere, gas-engine driven, single-operator arc welding set. Such a set is applicable in regions where local power supply is not available as in the case of pipe line and storage tank construction in isolated places. The complete set, shown in the accompanying illustration, consists of a 4-cylinder gas engine direct connected to a 300-ampere arc welding generator, with flexibly coupled exciter overhung from the generator bracket. The generator has a special bracket which fits into the engine housing to make for compactness. A control panel is mounted on



No. 131—Arc welding set, 300-ampere, gas engine driven

top of the generator frame and fully enclosed by a sheet metal cabinet. By means of a single dial rheostat the welding current may be varied over the entire range. Protective covers over the generator commutator and engine hood make the equipment suitable for service in adverse weather conditions without the use of a canopy. The gas engine has an S. A. E. rating of 28.9 horsepower, fuel consumption being approximately 1½ gallons per hour.

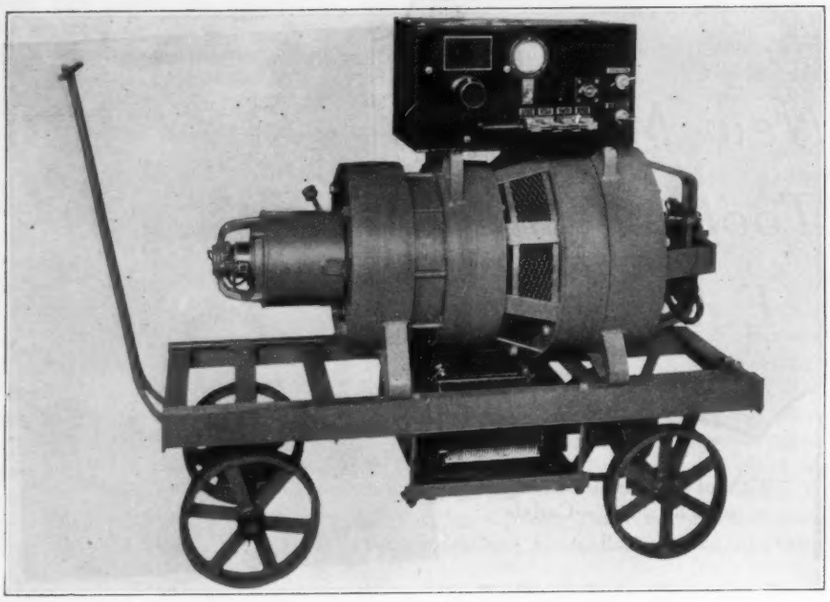
Controls Are Unified on Electric Arc Welder

No. 132

Lincoln Electric Co., Coit road and Kirby avenue, Cleveland, recently has placed on the market improved models of its electric arc welders, featuring unification of the controls of both motor and generator. The working mechanism of all controls is contained in a ventilated enclosed steel cabinet with hand regulators and switches mounted on a panel which forms a side of the cabinet. The control panel contains rheostat regulator,

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date Described	Page
Speed change gears	For vertical turret lathes; provides higher speeds	Bullard Co.	111	June 6	1535
Sand conditioner	Aerates and cools foundry sand for storage	Beardsley & Piper Co.	112	June 6	1535
Cut-off saw	High-speed; automatic power stock feed	Cochrane-Bly Co.	113	June 6	1535
Stocker drive	Electric motor and gear reduction	Combustion Engineering Corp.	114	June 6	1535
Gasoline engine	Portable type in small horsepowers	Fairbanks, Morse & Co.	115	June 6	1536
Hand nibbler	Cuts drill rods, performs nibbling and shearing	National Machine Tool Co.	116	June 6	1536
Band saw	High-speed type for patternmaking	Oliver Machinery Co.	117	June 6	1536
Welding generator	Double-arc type; flexible control a feature	Electric Arc Cutting & Welding Co.	118	June 6	1536
Milling machines	Standard and universal types for heavy work	Brown & Sharpe Mfg. Co.	119	June 6	1536
Safety starter	Across-the-line type, featuring remote control	Lincoln Electric Co.	120	June 6	1537
Switchboard instruments	Special glass minimizes glare; anti-parallax scale	General Electric Co.	121	June 13	1576
Paint sprayer	Operates on current from light socket; light weight	DeVilbiss Co.	122	June 13	1576
Milling machine	Rough mills gear and pinion teeth on production basis	Kearney & Trecker Corp.	123	June 13	1577
Spot welder	Applicable to welding of light sheet metal parts	Thomson Electric Welding Co.	124	June 13	1577
Die head	Self-opening and nonrotating with integral trip	Murchey Machine & Tool Co.	125	June 20	1664
Generators	200, 300 and 400-ampere capacities for arc welding	Westinghouse Electric & Mfg. Co.	126	June 20	1664
Spot welder	Also may be used for multiple projection welding	Taylor-Winfield Corp.	127	June 20	1665
Sander	Vertical belt type for sanding irregularly shaped parts	Porter-Cable Machine Co.	128	June 20	1665
Switch	Small manual starting switch; throws motor across line	General Electric Co.	129	June 20	1665
Buffer	Dual-motored with flexible rope drive	Hisey-Wolf Machine Co.	130	June 20	1665
Arc welder	Gas engine driven; 300-ampere generator	Westinghouse Electric & Mfg. Co.	131	June 27	1721
Arc welder	Controls are unified and improved; welded assembly	Lincoln Electric Co.	132	June 27	1721
Lathe	Automatic; for machining lighter types of work	Seneca Falls Machine Co.	133	June 27	1722



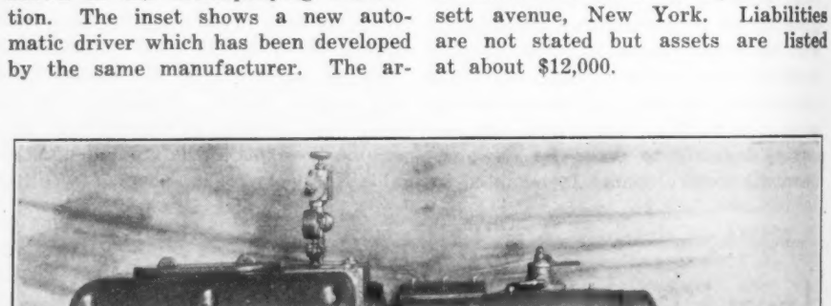
No. 132—New 300-ampere portable electric arc welder with unified controls

diverter switch, safety starter switch, volt-ammeter and wing-nut terminals for cables. The use of a combined voltmeter and ammeter in an instrument known as a volt-ammeter, permits reading the voltage and amperage on one dial and eliminates the use of separate indicating devices. The wing-nut terminals for the lead cables make quick and easy connections possible, especially when it is desired to reverse the polarity of the welding current. A push button switch is incorporated in the control panel for starting and stopping the welder. This new type of switch is said to offer an additional safety feature to the operation of the unit. The accompanying illustration shows the new type 300-ampere portable welder for alternating-current power supply.

Light Work Machined by Automatic Lathe

No. 133

Seneca Falls Machine Co., Seneca Falls, N. Y., recently has designed a new automatic lathe, developed to machine the lighter types of steering knuckles, stem pinions, side gears, pistons, both aluminum and cast iron, and to do second operation work on some larger parts. When the machine is started it makes a complete cycle and stops with the carriage slides returned to the starting position. A single lever brings the tailstock center into position and starts the machine in operation. Equipped with individual motor drive, the motor is mounted in the base of the machine, drive being through three-belt or silent chain, completely enclosed. Pick-off gears are provided for changing both speeds and feeds. Ball and roller bearings are provided for all shafts including the main spindle, so that if desired, the high speeds required by the new cutting tool materials may be obtained. All cams, gears and other mechanism in the head end are lubricated automatically by a force feed pump. The machine will take work 5 inches in diameter and 12 inches long. A front view of the lathe is shown in the accompanying illustration. The inset shows a new automatic driver which has been developed by the same manufacturer. The arrangement of the driver is such that it may be applied to any machine by the use of a chuck plate similar to those used in applying standard chucks to lathes. The work is gripped by means of two corrugated jaws, the corrugated surface being somewhat eccentric to the pivoting point. These jaws are mounted in a slide which is free to float in a transverse guide in the driverhead so that, regardless of whether the work is centered properly or not, excessive pressure on the head center is avoided.



No. 133—Automatic lathe for machining light work. (Inset) Automatic driver

Names Convention Date

Announcement has been made that the annual convention of the Association Technique de Fonderie de Paris this year will be held at the Ecole des Arts et Metiers, Paris, Oct. 25-26. The exchange paper of the American Foundrymen's association will be presented by H. Bornstein, chief metallurgist, Deere & Co., Moline, Ill. His subject will be "Agricultural Implement Castings." The exchange paper of the Institute of British Foundrymen will be by H. Turner, University of Birmingham, whi will contribute a review of the alloys now being cast in Great Britain, particularly nonferrous alloys.

The Irving Trust Co., New York, has been appointed receiver of the Boulevard Iron Works Inc., 1535 Bassett avenue, New York. Liabilities are not stated but assets are listed at about $12,000.

Rising Costs Cited as Warrant for Higher Steel Tariff

Two Institute Representatives Would Revise House Bill Upward—

Senate Subcommittee Considers Metal Schedule

STEEL producers, appearing before the metals schedule subcommittee of the senate finance committee at Washington have renewed their appeal for higher tariff protection for the industry. The subcommittee, of which Senator Reed of Pennsylvania is chairman and including Senators Smoot and King of Utah, Edge of New Jersey and Barkley of Kentucky, is considering the revision of the current tariff act which was passed by the house May 28 and is to be reported back when the senate convenes Aug. 19.

John A. Topping, vice president of the American Iron and Steel institute and chairman of Republic Iron & Steel Co., presented a detailed comparison of imports and rates now in effect and proposed by the house revision, and stressed the increase in cost of production as warranting higher rates. Mr. Topping said, in part:

I have been told that there exists an impression that the steel industry is indifferent to the matter of tariff duties on imported products. Permit me to say that this is not the case. The iron and steel industry is very much interested in the maintenance of sound protective principles, not only for its own protection, but for the protection of all other domestic industries.

The impression received, that we were indifferent to the tariff, doubtless is due to the fact that only a small group of steel people appeared at the recent hearing before the ways and means committee of the house of representatives. While the number present was small, yet it was a very representative body, for the reason, that for the first time in the history of the American Iron and Steel institute, which organization represents 95 per cent of the industry, I appeared before this committee as its vice president and briefs were also filed by its tariff counsel.

Since the enactment of the Payne-Aldrich law in 1909, the general trend of iron and steel costs has been strongly upward, by reason of increases in labor costs, freight rates and taxes. This, notwithstanding the great improvements made in the process of manufacture, through the introduction of labor-saving devices and general improvement in practice, which have resulted in speeding up output, reducing waste and saving man power.

I may also state, since the date mentioned, base labor rates have increased about 115 per cent, and the hours of work reduced about 33 1/3 per cent. That is to say, the rate per hour for common labor in 1909 was 15½c for a 12-hour day. At the present time, the rate per hour is 50c for an 8-hour day. In other words, common labor in 1909 earned $1.86 for 12 hours work, as against $4 per day for 8 hours work at the present time. Freight rates and taxes have more than doubled and I need not point out that both of these items are determined by governmental action and therefore, beyond our control.

As to freight rates, when it is considered that it requires the movement of about six tons of raw material, to produce one ton of finished product, it is obvious this large increase in freight rates has added enormously to cost of production. As against this large increase in cost of production, prices for iron and steel to the consumer have increased only about 44 per cent.

While further progress may be expected in the future, through additional improvement in practice, it would be unreasonable to expect the same rate of progress as heretofore. However, it may be expected, as heretofore, that whatever cost economies are effected, will inure to the benefit of labor and the public.

In view of the large increase in cost of production, it will be apparent to this committee, that the rates of duty heretofore recommended, are modest in the extreme, as the rates proposed on finished iron and steel are, in most every case, substantially lower than those in the Payne-Aldrich law, whereas on most all imported raw materials or supplies, particularly in the case of manganese ore, they are excessively higher.

Duty on Manganese Ore Unjust

On manganese ore particularly, we feel that the duty imposed by the tariff act of 1922 is enormously burdensome and entirely without justification from any possible point of view. Manganese ore is literally a raw material, yet it bears a duty equivalent to an average ad valorem for the six calendar years, 1923 to 1928, of 81.58 per cent. In 1923 the duty was equal to 107.92 per cent and in 1928 to 88.76 per cent, and as I view the situation, this duty is not in effect a protective one because as has already been demonstrated, there is no domestic industry which produces or can produce the required amount of ore in commercial quantities. Since it is not a protective duty, it must be a revenue duty, and a revenue duty of approximately 100 per cent on a raw material, is indefensible.

As showing the unscientific character of this duty, I desire to draw your attention to the fact that the government figures show the total duty paid on manganese during the six years (1923-1928) was more than fifteen times the total value of the domestic production of metallurgical grade manganese ore, during the same period. I estimate that our total import tax on all imported raw materials, since the enactment of the Fordney bill, has been increased more than $24,000,000 per annum.

As the manufacture of ferromanganese is an established domestic industry, we endorse the recommendation heretofore made, that a proper differential duty of $12.50 per ton be placed thereon, which is almost exactly the equivalent of 25 per cent ad valorem, the rate imposed by the existing law on alloys, not specially provided for, used in the manufacture of steel.

As the general representative of the iron and steel industry, I recommend the adoption of these changes, as they are all made in the interest of maintaining high wages and full employment, without which we cannot maintain the maximum purchasing power of our people, which is the basis of our present prosperity. If we are to meet European competition on finished iron and steel products, we should reduce the cost on such of our raw materials and supplies as are not produced at home and maintain reasonable protection on finished products in order to retain our present wage schedules.

On behalf of the American Iron and Steel institute, Thomas J. Doherty, tariff counsel, submitted proposed amendments to the bill as it passed the house last month, substantially as printed in IRON TRADE REVIEW, May 16, when the bill was introduced.

In Par. 302 Mr. Doherty suggested that the proposed duty on ferrosilicon-aluminum alloy used in the manufacture of steel and all alloys used in the manufacture of steel or iron, not specially provided for, be reduced to 25 per cent ad valorem.

In Par. 303 it is recommended that the first three brackets be so amended that the bracket will read "all the foregoing valued at not above 2½c per pound."

It is recommended that the first bracket of Par. 304 be eliminated and the second bracket be changed to read "all the foregoing valued at not above 1½c per pound."

In Par. 307 it is suggested that the first bracket be stricken out, leaving only the two classifications on iron and steel plates, with the dividing line at 3c per pound.

The loose phraseology referring to structural shapes in Par. 312 is criticised, though an alternative suggestion is to let the language stand and change the rates of duty for shapes not assembled, manufactured or advanced, etc., ½c per pound and on those shapes manufactured or advanced to 1c per pound. It is claimed these rates would be consistent with the rates in Par. 304.

The separate classification for steel sheet piling in Par. 312 is lauded but it is suggested that the duty be made ½c per pound.

In regard to Par. 313 it is suggested that the differential between flat steel wire rods and hoop or band steel, of five one-hundredths of 1c per pound be abolished.

For Par. 328, referring to tubes, the institute proposes the following schedule:

Lap-welded, butt-welded, seamed, or jointed iron or steel tubes, pipes, flues, and stays, not thinner than sixty-five one-thousandths of an inch, if not less than five-eighths of an inch in outside diameter, 1 cent per pound; if less than five-eighths and not less than one-half of an inch in outside diameter, 1¼ cents per pound; if less than one-half of an inch in outside diameter, 1¾ cents per pound; provided, that no tubes, pipes, flues, or stays made of charcoal iron shall pay a less rate of duty than, 1¼ cents per pound, cylindrical and tubular tanks or vessels, for holding gas, liquids, or other material, whether full or empty; welded cylindrical furnaces, tubes and flues made from plate metal, whether corrugated, ribbed or otherwise

reinforced against collapsing pressure, and all other finished or unfinished iron or steel tubes not specially provided for, 35 per cent; flexible metal tubing or hose, whether covered with wire or other material, including any appliances or attachments affixed thereto, not specially provided for, and rigid iron or steel tubes or pipes prepared and lined or coated in any manner suitable for use as conduits for electrical conductors, 35 per cent.

For Par. 331, referring to nails and spikes, the institute proposes the following provision:

Nails, spikes, tacks, brads and staples, made of iron or steel wire not less than one inch in length and exceeding one hundred and forty-eight one-thousandths of one inch in diameter, four-tenths of 1 cent per pound; not less than one inch in length, seventy-two one-thousandths of one inch or more in diameter but not exceeding one hundred and forty-eight one-thousandths of one inch, three-fourths of 1 cent per pound; less than one inch in length or less than seventy-two one-thousandths of one inch in diameter, 1½ cent per pound.

Representing the Southern Tariff association, George W. Armstrong, president, Texas Steel Co., Fort Worth, Tex., has requested the senate finance committee to increase the duty on iron and steel bars. The duty should be no less than 1 cent a pound, although the Dingley act rate of 8/10 cent per pound "would help enormously," declared Mr. Armstrong.

The highest freight and duty on foreign steel to Houston and Galveston is $9.50 per ton, compared with the freight of $8.50 per ton from the Texas Steel Co.'s mill at Fort Worth. The average price of bars at these Gulf ports from 1925 to 1928 has been $32 per ton, less than the cost to manufacture in the average American mill, stated Mr. Armstrong.

The American tariff should not be fixed without relation to the collection of American loans, and foreign debts should not be collected at the expense of American labor, asserted Mr. Armstrong. To compel American producers of iron and steel to establish foreign plants would be a mistake. Both political parties are committed to a protective tariff, stated Mr. Armstrong, but the measure passed by the house is not a protective tariff measure. It will be a "shock and disappointment if the Republican party reverses its ancient tariff policy," warned Mr. Armstrong. He said further:

I respectfully submit that it is of advantage to the country that the small steel industries located near the Gulf coast be permitted to live and develop, and that the tariff rates should be high enough to afford them protection. The rates should now be adjusted, as prior to the Fordney act, to the needs of the small industry, manufacturing a limited number of articles, with limited resources and a limited market; instead of the big one with the most modern of plants, manufacturing a great variety of articles, and located most remotely from the seaboard.

The wide distribution of industries throughout the length and breadth of the land is of great public advantage, particularly in time of war when there is congestion of traffic. But for the valor of the American soldier, the patriotism of the American farmer, and the magnitude of the American steel industry which is founded on tariff protection—the failure of either of these three factors—would have meant a different ending and a different story of the late war.

Differentiation between acid, ceramic and metallurgical fluorspar, which are grouped together in the tariff bill as it passed the house and increased from $5.60 to $8.40 a ton, was urged by F. F. Colcord, of the United States Smelting & Refining Co., New York. Acid and ceramic fluorspar, he said, should be kept under the old rate of $5.60 a ton.

Nelson Franklin, of Washington, appearing before the earthenware subcommittee of the finance committee on behalf of tungsten miners, advocated that rates on crude magnesite of fifteen thirty-seconds of 1 cent a pound recommended by the President on advice of the tariff commission and made effective by presidential proclamation be put in the bill. The ways and means committee of the house had recommended a rate of five-sixteenths of 1 cent.

Mr. Franklin urged that the senate concur in the house recommendation of fifteen-sixteenths of 1 cent a pound on calcined magnesite, the prevailing rate. He said that he represented magnesite interests of the Pacific coast.

The American Manganese Producers' association, Washington, has renewed its plea for higher duty on manganese ore, suggesting the following verbiage:

Manganese ore or concentrates of all kinds, containing less than 10 per cent of metallic manganese, shall be admitted free of duty; containing 10 per cent or more of metallic manganese and less than 20 per cent, one-half of 1 cent per pound on the metallic manganese contained therein; containing 20 per cent or more of metallic manganese and less than 25 per cent, 1 cent per pound on the metallic manganese contained therein; containing 25 per cent of metallic manganese, or more, 1½ cents per pound on the metallic manganese contained therein.

Philadelphia Steel Club Golfs and Dines

The Steel Club of Philadelphia held its annual outing June 21 at the Aronomink Golf club, Philadelphia. About 200 members and guests were present, the latter comprising many of the important buyers of steel in the general Philadelphia district. Visitors also were present from distant points such as Buffalo, New Orleans and other cities. The day was spent on the golf links and the usual dinner was held in the evening.

S. J. Cotsworth, Lorain Steel Co., served as chairman of the committee on arrangements for the affair. A brief address of welcome was made by Willard S. Haring, president of the club and general manager of sales of the Alan Wood Steel Co. Other officers of the club are: Vice president, Paul King, general manager of sales, Worth Steel Co.; secretary and treasurer, Samuel H. Baker, Sharon Steel Hoop Co.

Sharon Steel Hoop Rate Is Doubled

Directors of the Sharon Steel Hoop Co., Sharon, Pa., June 21 voted the first quarterly dividend of 50 cents a share on the outstanding no par stock of the company, payable on July 25 to stockholders of record at the close of business July 5. This is the first dividend declared on the no par stock, the only issue the company has outstanding.

The announcement of a quarterly dividend as a policy is significant as in recent years the old stock had been receiving 50 cents a share semiannually. Consideration has been given to the probable future dividend payments in part cash and part stock to meet quarterly authorizations in order to accelerate the liquidation of bonded indebtedness.

The company has entirely changed its funded and capital structure during last year and during the first half of 1929. Last year it retired its 8 per cent bonds by bonds bearing a rate of 5½ per cent and April 1 called for redemption all outstanding 8 per cent cumulative preferred stock and on May 1 changed its $50 par common stock to a no par common stock. The only stock the company has now outstanding is 375,000 shares of no par common stock, of which more than 12,000 shares are in the hands of trustees or in the treasury.

It was stated that the net earnings applicable to dividends, after all deductions, were more than sufficient in the first five months to take care of the dividends for an entire year and it is the expectation that the net earnings applicable to dividends for the first six months of this year will at least equal the total net earnings of all of 1928.

Specifications for marine boiler steel plates have been promulgated by the American Marine Standards committee as of March 21, 1929.

Editorials

Need Better Test for Cast Iron

METHODS for testing cast iron were discussed widely at the International Foundrymen's congress in London two weeks ago, but no definite action was taken. Experts from Great Britain, France, Belgium and the United States agree that no test as yet serves all the requirements of industry.

The British have adopted a standard specification defining the dimensions of three test bars cast from the same metal at the same time as the casting. Tensile, transverse and shock tests are made on these bars, although it is generally acknowledged that bars made in this manner do not necessarily represent the quality of the casting itself, but only define the characteristics of the metal that goes into it.

French investigators recommend the shear test and the static-transverse test with the use of small test pieces trepanned from the casting by means of a hollow drill, the method being known as the Fremont test. This method was proposed so that the engineer might obtain an idea of the qualities of the casting itself. British foundrymen, however, are of the opinion that no constant ratio exists between the shear test value and the tensile test value of the cast irons of commerce, consequently they suggested that adoption of the Fremont test for commercial specifications be deferred in Great Britain.

Although the discussion brought no conclusions, it enabled those who took part to understand each other's point of view. Certain points were made more clear with the result that further work may be conducive to more definite conclusions. The feeling was expressed that the French research workers have done valuable and serviceable work and have focused attention on the necessity of finding a test to give some information on the qualities of the casting itself.

Unbiased Investigation Needed

ANY new process or material introduced into industry must expect to face strong opposition from the forces associated with the old process or old material which the new is designed to replace. Welding is a relatively new process in the fabricating field and naturally it is encountering opposition from many directions. Recently a large caisson used in the construction of a bridge over the Hackensack river between Jersey City and Kearny, N. J., burst with loss of life to six and injury to eight workers. Reports indicate that the cause of the accident was the failure of a welded joint in the steel shaft leading to the caisson. Union officials and others connected with the building industry have been quick to seize upon the incident as incrimination of welding as against riveting. Some have even stated that had the joint been riveted instead of welded it would have held.

Whatever the result of the investigation, the failure of one example cannot indict a whole method, and even in the face of such an unfortunate accident, the thousands of successful applications of welding to fabricated steel must turn engineering attention to the specific incident and not to the method.

Riveting and welding each have an important and established place in building construction. Close attention to design and workmanship is essential to each. Failures of any engineering work should be thoroughly investigated to determine the cause because it is through failure that progress is made. However, care should be taken to keep investigation unbiased and interpretation of result specific.

Electricity Aids Steel Production

ELECTRIFICATION of the steel industry has progressed rapidly in recent years, it was emphasized at the recent annual convention of the Association of Iron and Steel Electrical Engineers in Pittsburgh. Last year marked a record period in number of electric drives installed on all types of mills, and both the number and horsepower of such drives now are at the highest peak in the history of the industry. Over 1600 electrically driven main rolls installed today represent over 20,000,000 horsepower.

It is significant to note that the last six years have witnessed the greatest strides in steel mill electrification. At the end of 1922 total horsepower installed on all types of mills was only about one-half the 2,000,000 horsepower available today. Additional rolling facilities are represented from year to year in the constantly expanding horsepower, although considerable of the old steam power is being replaced by electric drive.

The increase in strip mill installations is reflected in the fact that 25 per cent of the total number of main roll drive motors installed last year were on strip mills.

The electrical industry has played an important part in increasing steel production and steelmaking efficiency. The proper combination of motors and control has given man the command over ponderous machinery, without which steel could not be the inexpensive valuable metal it is today. Past experience indicates that electricity and steel will go hand in hand in future developments of the latter.

Size Without Profit Is Valueless

OVER-EMPHASIS probably is being given to the subject of increasing volume of business and to the expansion of physical assets in industry. Successful management today is spoken of in terms of increasing turnover and in preparation for greater volume for the future. Addressing western iron and steel scrap dealers recently, a Chicago financial authority declared that while volume and expansion are significant in keeping abreast with industrial practice, they mean nothing in themselves if they fail to contribute to greater profits.

These remarks were singled more directly to the heads of the relatively smaller business enterprises. Nevertheless, the statement that the personnel of industrial organizations, from the president to clerk and office boy, should concentrate itself mainly on turning in profits is worth while in thoughtful application to management generally. Two out of three failures in business are declared to be due to faulty management. Expansion and volume sales avail little if they do not account for greater financial returns on capital invested. The success of the small industrial operator stands out in comparison with returns of many larger organizations, when profits become the touchstone of progressive management.

Factories Safer Than Homes?

FEWER nonfatal accidents occur in general industrial operations in the United States than in homes, according to the annual statistical report of the National Safety council. The number of fatal accidents in industries in 1928 is variously estimated at 20,000 to 25,000, but the council accepts 24,000 as the basis for its figures. The council also gives the number of fatal accidents in homes as 24,000, "practically equal to the fatality toll in industry." Insurance data, however, indicate there are 200 nonfatal accidents in homes to every one that is fatal, while the factor in industry is 130 to one. Thus the council arrives at an estimate of 4,800,000 nonfatal accidents in homes to 3,250,000 in industry.

While the accident frequency and severity rates in industry are the highest for mining operations, the metals manufacturing group ranks far down in both lists. In the order of frequency, mining, construction, refrigeration, woodworking, packers and tanners, quarry, rubber, petroleum, paper and pulp and public utilities all come before "metals." In severity, metals stand eleventh from the top of the list. Power press work now is sixteenth in the list of importance as regards severity of accidents.

Motor vehicle fatalities account for 27,500 of the total 96,000 in 1928. While the number of deaths due to motorcar accidents is steadily climbing, the number per 100,000 cars in operation is diminishing. The fatality rate per 100,000 population is over twice as high as in 1918, but the rate per 100,000 cars registered is only 63 per cent of 1918.

Marine Market More Attractive

AUTOMOTIVE and railroad equipment requirements have rendered yoeman support to the steel markets this year, in large measure providing the impetus for record steel production. The backlogs which these major outlets have permitted the mills to accumulate promise to minimize the summer letdown, but fresh buying from these sources is diminishing. Accordingly, other consuming factors are coming out of their eclipse.

Shipbuilding is one of these. Automobiles, locomotives, railroad cars are turned out in spectacular fashion, and monthly statistics concerning them are awaited avidly. Steel skyscrapers in their boisterous construction days thrust themselves upon the public. But shipbuilding, requiring a year or more for its product to mature and with its ways in the limelight chiefly through the occasional launching, fails of merited recognition.

Nor is shipbuilding any Cinderella of industry today. The marine industry is busy. Ninety per cent of all privately-owned vessels are in operations. Since the passing of the Jones-White merchant marine act and the letting of $12,000,000 in marine mail contracts, the industry as a whole is prosperous. An authority like *Marine Review*, of Cleveland, estimates that contracts let, contracts pending and new ships required point to an expenditure of close to $500,000,000 in the next few years. Of this sum half will be spent for equipment, and one fifth of it will be for steel. Whoever is overlooking the marine field is passing by an attractive market.

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Steel Frame Building Is Fabricated by Gas Welding. Page 1711.

THE interstate commerce commission has proposed a mileage basis for freight rates on all iron and steel finished products, east of the Mississippi river and north of the Ohio and Potomac rivers, effective Oct. 20. This is considered the first attempt on a broad scale to establish the rates on a scientific basis. Ninety per cent of the country's steel output and 75 per cent of its consumption center in the territory affected. Details of one of the most important rate decisions since the war pertaining to iron and steel are given on pages 1749, 1750 and 1753.

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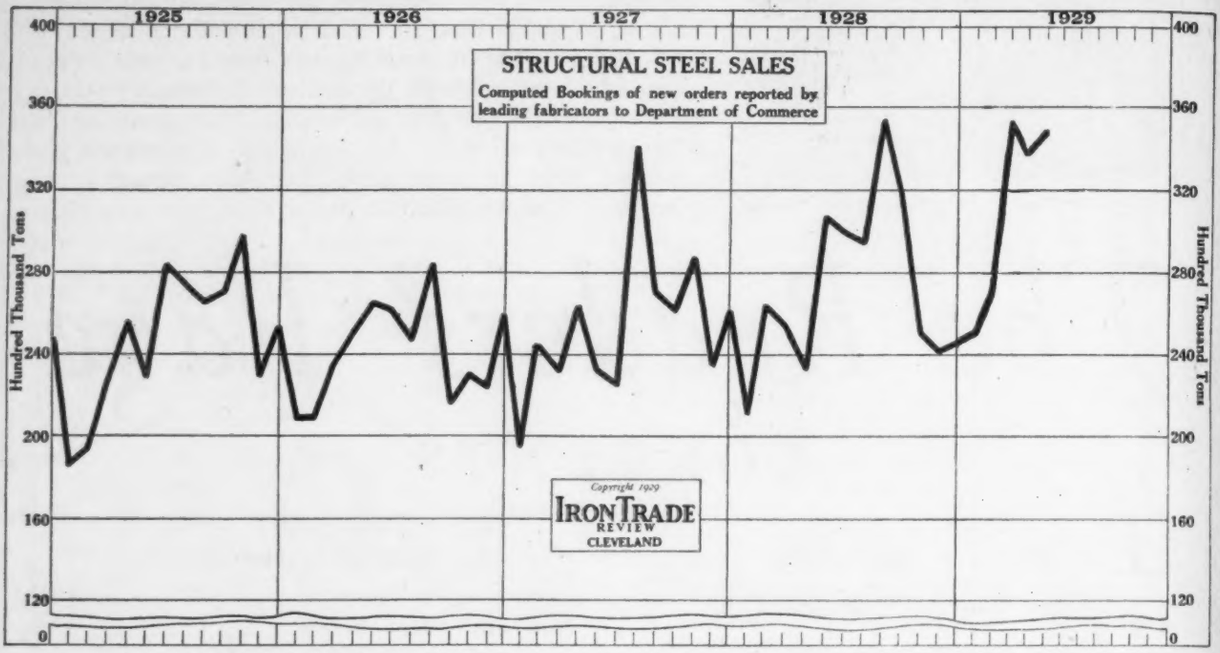
The Business Trend



Industrial Construction Continues High

By JOHN W. HILL, Financial Editor

ALTHOUGH building construction in general has been running about 20 cent below the level of one year ago, the iron and steel industry has been feeling little direct effect from any such slackening. This is indicated by the continued high level of awards for structural steel. In May these climbed to the best total of any May on record and the second highest for any month of 1929.

BOOKINGS were at the rate of 90 per cent of capacity and compare with 87 per cent in April and 80 per cent one year ago. The computed tonnage of new orders for the month was 346,500 tons, compared with 334,950 tons in April and 308,000 tons one year ago. For the first five months the computed total was 1,582,350 tons, against 1,247,350 tons in the corresponding period of 1928.

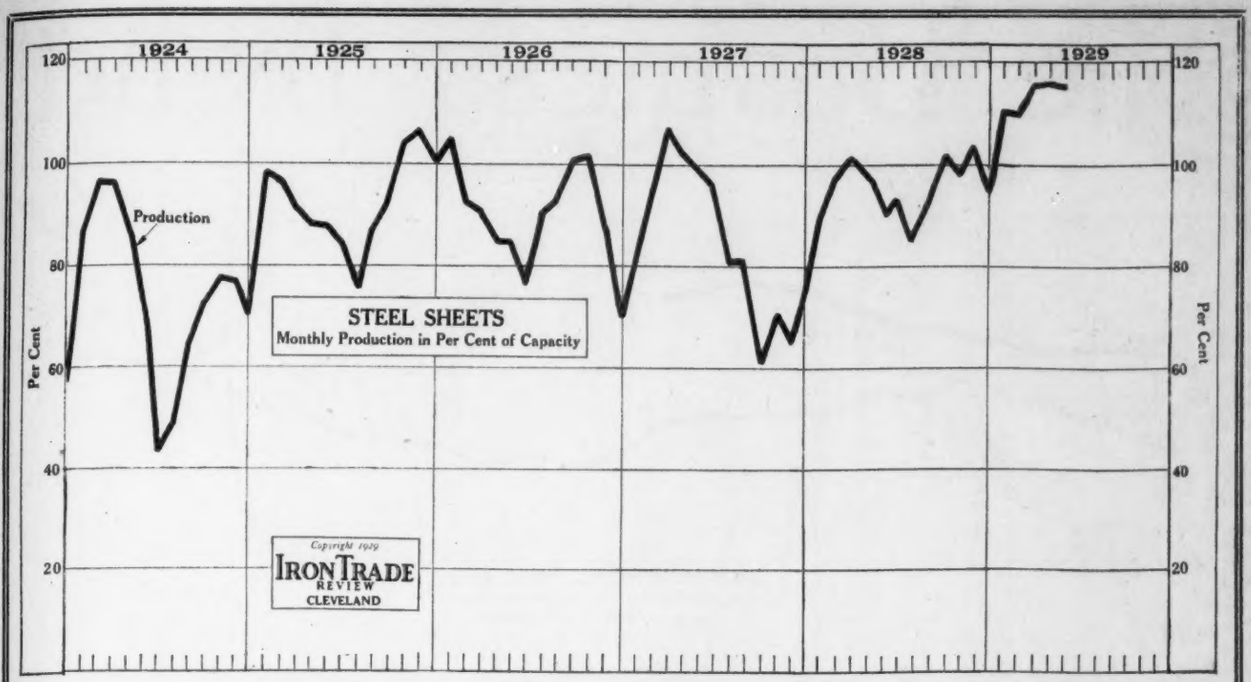
FROM these figures it appears that compared with last year there has been an increase in 1929 of 24 per cent in the kinds of building requiring fabricated steel. This, of course, is in sharp contradiction to the widely prevailing generalization that building is declining rapidly, due to tight money conditions.

IN RECENT years some of the eastern metropolitan centers, chiefly Greater New York, have indulged in a spree of residential building. This has clearly slackened during the current year. On the other hand, building in the great industrial sections in the Middle West has continued high, at least for the kind of building pertaining to industry.

DURING May contract awards in 37 eastern states as reported by the F. W. Dodge Corp. totaled 10,731,400 square feet. This was 72 per cent greater than the 6,200,000 square feet reported for industrial awards in May, 1928. Industrial activity of such high rate as has been in evidence naturally is being reflected in some industrial expansion. There is no indication that over-expansion is being courted.

WITH the advent of the summer season business is anxiously scanning the horizon for signs of what is ahead. At the peak of the spring activity the feeling was general that considerable decline was imminent. So far that has not come, the seasonal recession being more moderate than usual. Now the opinion prevails that no sharp drop is imminent.

The Business Trend

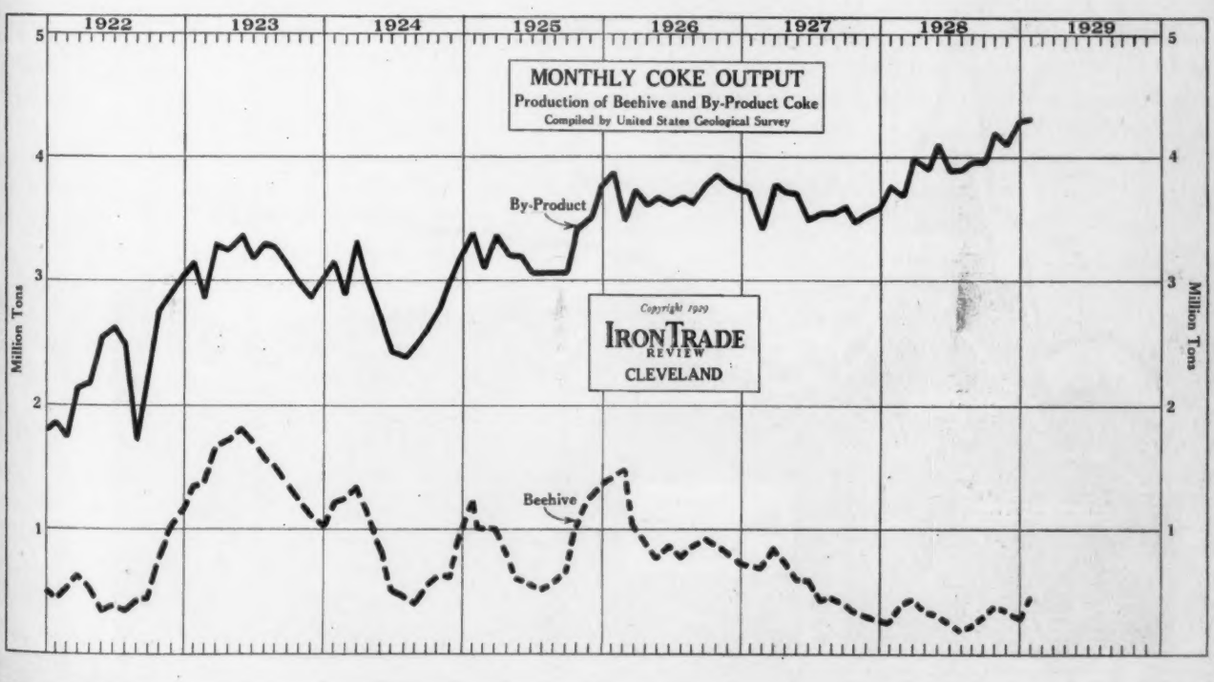


Steel Sheets

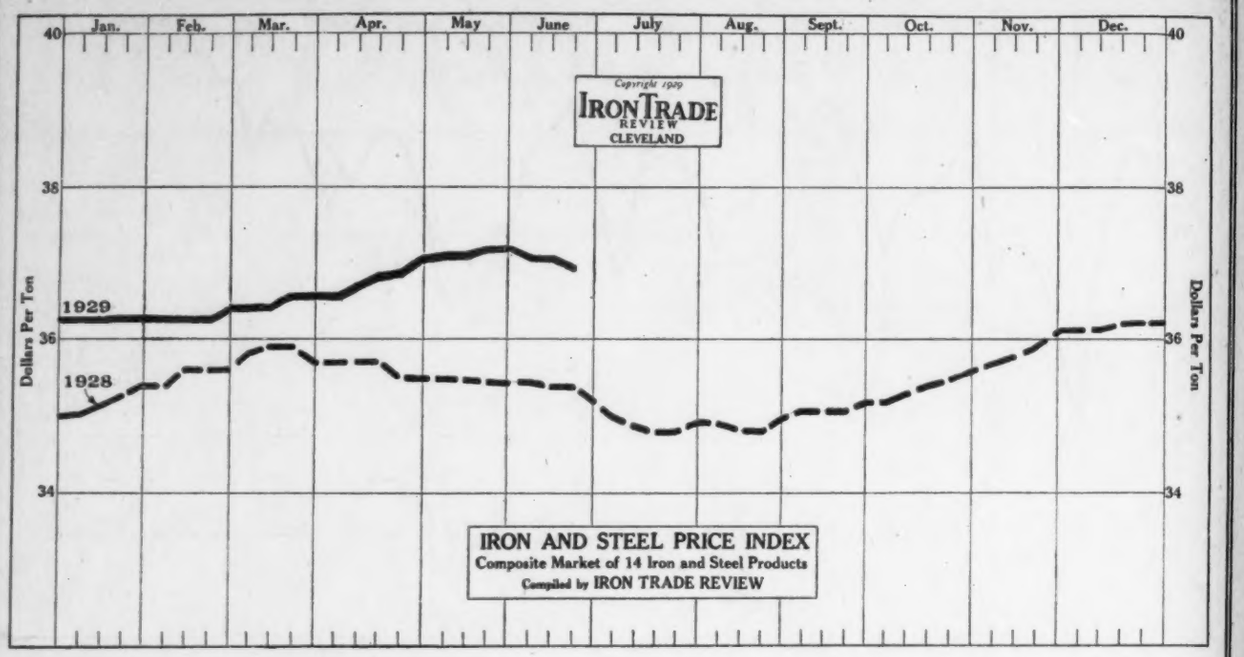
ALTHOUGH sales of steel sheets dropped sharply in May, production continue at a high level against business already in hand. Sales for the month as reported by the National Association of Flat Rolled Steel Manufacturers, stood at 82.4 per cent of capacity. Production was 115.8 per cent of capacity compared with 115.2 per cent of capacity one month before. Shipments for the month totaled 392,336 tons, compared with 377,274 tons in April and 263,648 tons in March. Unfilled orders remain large.

Monthly Coke Output

PRODUCTION of by-product coke in May made another new high record. Total output for the month was 4,664,242 tons, compared with 4,456,944 tons in April and 4,099,864 tons in May, 1928. Daily average output of by-product coke in May was 150,459 tons, compared with 132,254 tons one year ago. Beehive coke output totaling 597,400 tons in May was the highest since early in 1927 and it compared with 376,000 tons one year ago. By-product coke output has soared with rising steel production.



The Business Trend

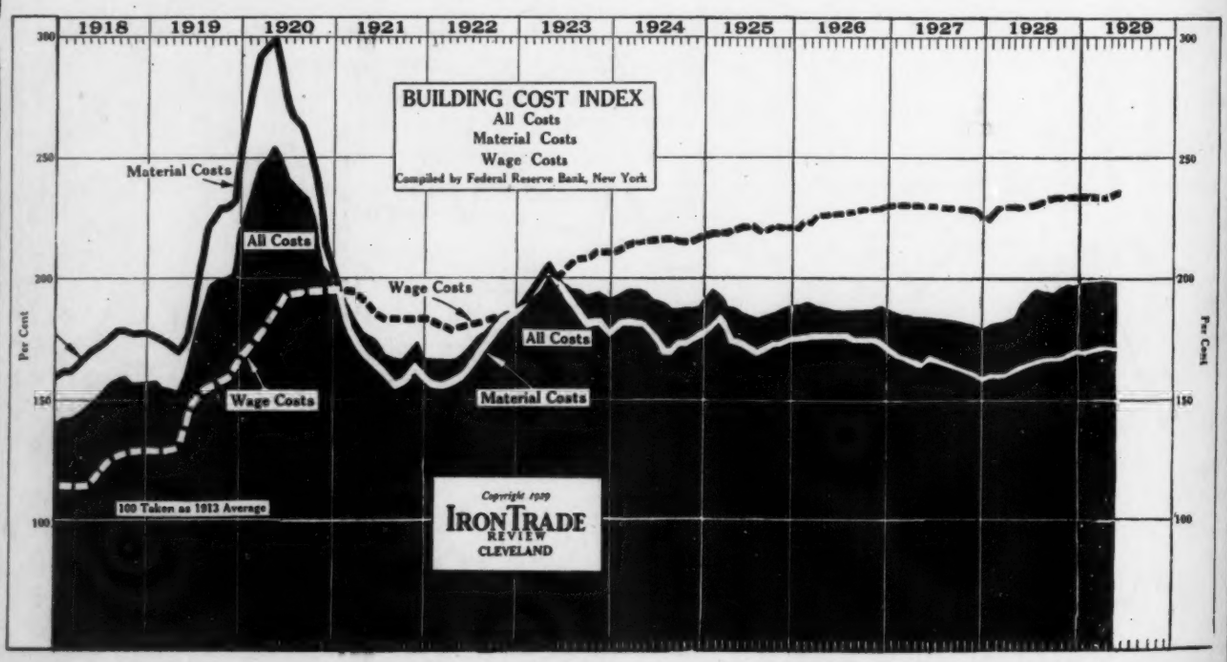


Iron and Steel Price Index

IRON TRADE REVIEW'S composite market average has turned downward. This is due to softness in southern and eastern pig iron prices. Prices of other materials, including valley pig iron and finished steel, continue firm. IRON TRADE REVIEW'S average in the third week of June stood at $36.96, compared with $37.07 one week before and the average for May of $37.10 a ton. One year ago the index stood at $35.30. On the whole, the strength of prices in the face of record outputs has been favorable.

Building Costs

DURING May there was a small increase in the index of building costs. This resulted from a decline of two points in the index of material prices. At the same time there was a small lift in wages. The index of building costs in May stood at 194, compared with 195 one month before and 191 one year ago. Material prices stood at index of 167, compared with 169 in April and 166 one year ago. Building wages' index was at 234, compared with 233 one month before and 229 one year ago.



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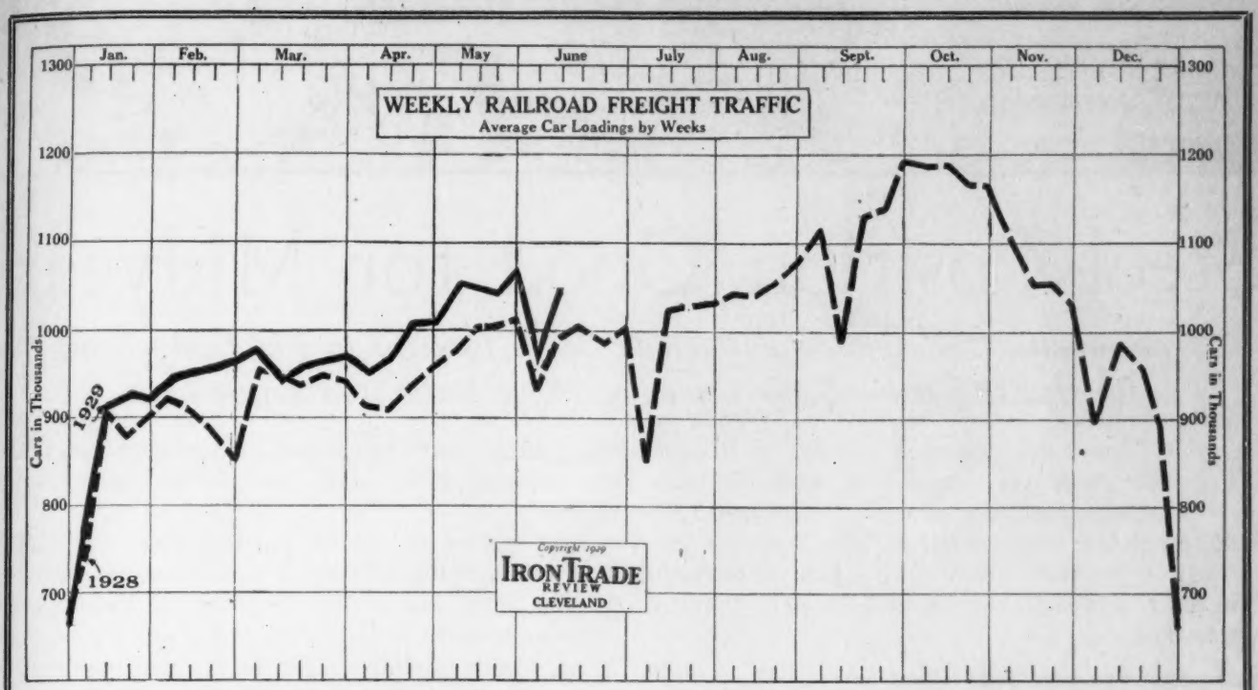
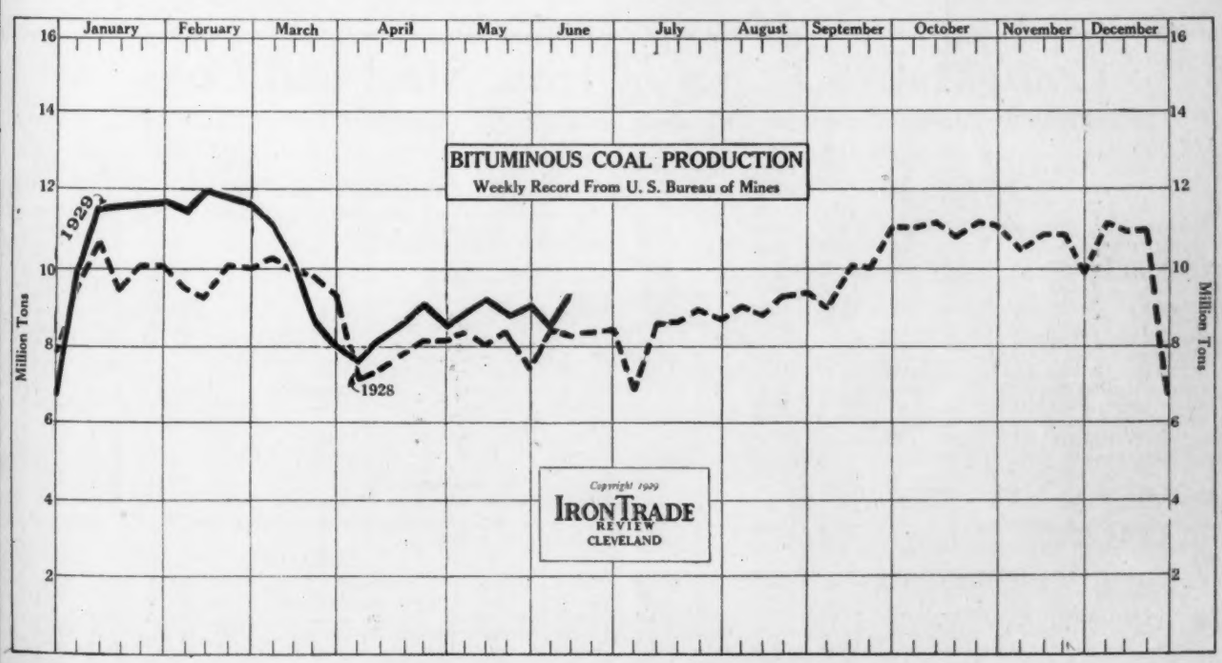


Railroad Freight Traffic

FREIGHT car traffic continues to indicate large scale industrial activity and unusual distribution of goods. Loadings of revenue freight for the week ended June 9 totaled 1,054,792 cars. This was an increase of 82,872 cars over the preceding week this year, when loadings were reduced owing to the Decoration day holiday. Compared with the corresponding week of 1928 there was an increase of 60,000 cars, and compared with the corresponding week of 1927 there was an increase of 26,000 cars.

Bituminous Coal Output

CONTINUED high operation schedules for industrial plants are tending to maintain production of coal at a relatively good level. Another factor is the movement of soft coal by vessel to the upper lake district. Lake shipments are now moving at a good rate. Production of coal for May was 40,090,000 tons, compared with 36,888,000 tons in April and 36,624,000 tons in May, 1928. The weekly production of soft coal is now running well above 9,000,000 tons. Coal prices have continued to display weakness.


BITUMINOUS COAL PRODUCTION
Weekly Record From U. S. Bureau of Mines
January February March April May June July August September October November December
16 14 12 10 8 6 4 2
Million Tons
1929
1928
Copyright 1929
IRON TRADE REVIEW
CLEVELAND

Steel Position Good for Midyear

Order Books Unexcelled for Period—More Interest in Pig Iron—Semi-finished Probably $35—Carriers Place Rails and Equipment

MOST steel producers are coming up to mid-year with the best order books in their history for that period. Not since 1920 have so many departments of the industry embarked on the third quarter with July output substantially sold and considerable August tonnage earmarked.

Coverage Exceeds Year Ago

Specifications and shipments of finished steel continue to turn down moderately, under seasonal influences, but third quarter contracting is brisk, considering the generally stable price situation and the forerunning record six months. Compared with a year ago, third quarter commitments of many consumers show an increase.

Contracting for third quarter pig iron is more active, many automotive foundries now being in position to foresee their needs more clearly. In some cases these requirements are within 20 per cent of the second quarter melt. Especially at Pittsburgh and St. Louis is more interest in iron manifest, and southern producers to move their surplus are competing in northern markets on an equal price basis for the first time in a decade.

Base prices on heavy finished steel are generally firm, with delivery a paramount consideration in many cases. Though some producers are more aggressive for business, many are not averse to an easier production period to make plant adjustments necessitated by the long run at top speed.

In semifinished steel the markets at Pittsburgh, Youngstown and Cleveland appear to be settling to a $35 base, though some makers—chiefly those with little material to sell—hold to the advanced level of $36 for sheet bars, billets and slabs. Some important additions to steelmaking capacity may result from the scarcity the past six months.

Record Second Quarter Ending

June production statistics, available in another week, doubtless will reveal new highs for the month for most producers of iron and steel. A record second quarter also is forecast. This week

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	June 26, 1929	May 1929	March 1929	June 1928
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.56	20.11	18.76
Basic, valley	18.50	18.30	17.60	15.80
Basic, eastern, del. eastern Pa.	20.25	20.50	20.25	19.10
No. 2 foundry, del. Pittsburgh	19.76	20.16	19.51	18.61
No. 2 foundry, Chicago	20.00	20.00	20.00	18.00
*Southern No. 2, Birmingham	15.00	15.50	16.00	15.88
**No. 2X, Virginia furnace	20.00	20.75	21.00	20.50
**No. 2X, Eastern del. Phila.	22.76	22.76	22.26	21.26
Malleable, valley	19.00	18.80	18.10	17.00
Malleable, Chicago	20.00	20.00	20.00	18.00
Lake Superior charcoal, del. Chicago.	27.04	27.04	27.04	27.04
†Gray forge, del. Pittsburgh	19.13	19.26	19.11	18.76
Ferromanganese, del. Pittsburgh	109.79	109.79	109.79	109.79

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.
†Now based on Pitts. dist. fur. price; formerly on Valley base.

COKE				
Connellsville furnace, ovens	2.75	2.75	2.95	2.60
Connellsville, foundry, ovens	3.75	3.75	3.75	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	35.00	36.00	35.00	33.20
Sheet bars, open-hearth, Pittsburgh	35.00	36.00	35.00	33.50
Billets, open-hearth, Pittsburgh	35.00	36.00	34.00	32.50
Wire rods, Pittsburgh	42.00	42.00	42.00	44.00

	June 26, 1929	May 1929	March 1929	June 1928
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.95	1.95	1.90	1.85
Steel bars, Chicago	2.05	2.05	2.05	2.00
Steel bars, Philadelphia	2.27	2.27	2.27	2.17
Iron bars, Chicago	2.05	2.05	2.00	2.00
Shapes, Pittsburgh	1.95	1.95	1.90	1.85
Shapes, Philadelphia	2.00	2.06	2.01	2.06
Shapes, Chicago	2.05	2.05	2.05	2.00
Tank plates, Pittsburgh	1.95	1.95	1.90	1.85
Tank plates, Philadelphia	2.15	2.15	2.10	2.10
Tank plates, Chicago	2.05	2.05	2.05	2.00
Sheets, black, No. 24, Pittsburgh	2.95	2.95	2.85	2.70
*Sheets, blue anl., No. 13, Pittsburgh	2.35	2.20	2.10	2.00
Sheets, gal., No. 24, Pittsburgh	3.60	3.70	3.60	3.55
Sheets, black, No. 24, Chicago	3.10	3.10	3.10	2.80
*Sheets, blue anl., No. 13, Chicago	2.50	2.35	2.35	2.15
Sheets, galvanized, No. 24, Chicago	3.85	3.85	3.85	3.70
**Plain wire, Pittsburgh	2.50	2.50	2.50	2.50
**Wire nails, Pittsburgh	2.65	2.65	2.65	2.60
Tin plate, per base box, Pittsburgh	5.35	5.35	5.35	5.25

*Comparisons are with old blue annealed base, No. 10.
**To large jobbers.

SCRAP				
Heavy melting steel, Pittsburgh	18.50	17.85	18.50	14.70
Heavy melting steel, eastern Pa.	16.50	16.25	16.25	13.15
Heavy melting steel, Chicago	14.75	15.45	15.55	12.60
No. 1 wrought, eastern Pa.	16.25	16.25	16.25	15.25
No. 1 wrought, Chicago	14.85	16.40	16.00	12.70
Rails for rolling, Chicago	17.50	17.50	17.50	14.85

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND

STEEL PLATES

Pittsburgh, base	1.95c
Philadelphia, del.	2.15c to 2.25c
New York, del.	2.225c to 2.325c
Boston, del.	2.265c to 2.415c
Chicago, base	2.05c to 2.15c
Cleveland, delivered	2.14c
Lackawanna, N. Y., base	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Coatesville, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
St. Louis, del.	2.27c
Detroit, del.	2.19c to 2.24c

STRUCTURAL SHAPES

Pittsburgh, base	1.95c
Philadelphia, base	2.00c to 2.11c
New York, del.	2.195c to 2.245c
Boston, del.	2.265c to 2.415c
Chicago, base	2.05c to 2.15c
Cleveland, delivered	2.14c
Lackawanna, N. Y.	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	2.19c to 2.24c

BARS

SOFT STEEL

Pittsburgh, base	1.95c
Chicago, base	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Lackawanna, N. Y., base	2.05c to 2.15c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.90c to 1.95c
Cleveland, del., outside mills	1.95c to 2.00c
Philadelphia, del.	2.27c to 2.32c
New York, delivered	2.29c to 2.34c
Boston, delivered	2.265c to 2.415c
Detroit, del.	2.19c to 2.24c
Pittsburgh, cold finishing	2.05c
Pittsburgh, forging quality	2.15c

RAIL STEEL

Chicago Heights	1.95c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	2.05c to 2.15c
New York, delivered	2.14c to 2.24c
Philadelphia, delivered	2.12c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.30c
Stock lengths from mill	2.00c
Chicago, billet	2.40c to 2.90c
Chicago, rail steel	1.95c to 2.05c
Chicago, rail steel, road and bridge work	1.95c to 2.05c
Philadelphia, cut lengths	2.57c to 2.62c

SHEETS

SHEET MILL BLACK, NO. 24

Pittsburgh, base	2.85c to 2.95c
Philadelphia, delivered	3.17c to 3.27c
Gary, Indiana Harbor	3.05c
Chicago, delivered	3.10c
Birmingham, base	3.10c
St. Louis, del.	3.27c

TIN MILL BLACK, NO. 28

Pittsburgh, base	3.00c
Gary, base	3.10c

GALVANIZED, NO. 24

Pittsburgh, base	3.60c to 3.70c
Philadelphia, delivered	3.92c to 4.02c
Gary, Indiana Harbor	3.80c
Chicago, delivered	3.85c
Birmingham, base	3.85c
St. Louis, del.	4.02c

BLUE ANNEALED Sheets, No. 13

Pittsburgh, base	2.35c
Chicago district mills	2.45c
Chicago, delivered	2.50c
St. Louis, delivered	2.67c
Philadelphia, delivered	2.67c
Birmingham	2.50c

Plates, No. 9 and 10

Pittsburgh, base	2.10c to 2.20c
Chicago district mills	2.30c
Chicago, delivered	2.35c
Philadelphia, delivered	2.42c to 2.52c
St. Louis, delivered	2.52c
Birmingham	2.35c

AUTOMOBILE, NO. 20

Pittsburgh, base	4.10c
Detroit, delivered	4.39c

FURNITURE

Pittsburgh	4.20c

(*Turn to the following page*)

Steel corporation subsidiaries have eased off three points, to 99 per cent, while independent producers are down two points, to 92 per cent. The entire steel industry is averaging 95 per cent this week, against 96 last week.

Railroads loom large in the steel news of the week. Southern Pacific has bought 33,864 tons of rails, Chicago mills look for heavy secondary buying of track material shortly, and the Pennsylvania is closing on 5000 tons of fastenings. Rail mills at Chicago expect to go into August at their present high rate. New York Central has placed 25 locomotives, with the Wabash inquiring for 25. Lackawanna is inquiring for 1250 freight cars. Car awards approximate 375, not not including repairs to 300 for Seaboard Air Line. Pennsylvania is ordering 4000 car bodies.

Automotive Letdown Is Moderate

Automotive requirements for bars, sheets and strip continue dominant, although ebbing slowly. Some automobile manufacturers will take more material in July than in June, as new models go into production. It still is true that so long as Ford and Chevrolet hold at above 7300 and 6000 cars daily, respectively, the summer lull in the industry will be greatly tempered. As mills slowly make headway against deferred shipments, automotive users can order more closely. Plate delivery situation at Chicago continues unrelieved, with mills booking 8000 tons for western oil tanks and a western railroad needing 10,000 tons for car repairs. Barge work at Pittsburgh requires 1400 tons. Structural deliveries are sufficiently deferred at Chicago to permit eastern mills to participate there. Unusual bar demand for late June arises in the generally-good manufacturing situation.

June Ore Tonnage a Record

Indications are that the June movement of iron ore on the Great Lakes will surpass the previous June record—9,921,000 tons brought down in 1918. Foreign manganese ore prices are weaker, some being offered at 31 cents.

Pittsburgh district sheet mills are assured of practically capacity operations into August. Valley mills note a slight slackening in automotive orders, but other users almost close the ranks. Though sheet production continues to increase at Chicago, backlogs are heavier. Strip and cold finished steel shipments still are slightly in excess of incoming business. Wire production is off as demand for the manufacturing lines tapers gently. Nail orders continue slow.

Improved conditions in the European markets are reflected by decision of the European steel entente to increase production 1,000,000 metric tons annually. This makes the yearly aggregate 32,287,000 tons, with quotas increased proportionately, states the IRON TRADE REVIEW weekly cable.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (June 26, 1929)	$36.84
Last week (June 19, 1929)	36.96
One month ago (May, 1929)	37.10
Three months ago (March, 1929)	36.42
One year ago (June, 1928)	35.30
Ten years ago (June, 1919)	47.88
Fifteen years ago (June, 1914)	22.58

Failure of semifinished steel makers to hold their advance has lowered the IRON TRADE REVIEW composite of 14 leading iron and steel products 12 cents, to $36.84. The high point recently was $37.13, reached late in May.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted On Last Editorial Page—See Preceding Page For Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	2.00c
Hot strip 6¼ to 24-in., Pitts.	1.90c
Hot strip, bands 6 in. and under, Chicago	2.10c to 2.30c
Do, 6¼ to 24 in.	2.00c to 2.10c
Cooperage stock, Pittsburgh	2.20c
Do, Chicago	2.30c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 ton and over)	2.75c to 2.85c
Worcester, Mass. (3 tons and over)	2.90c to 3.00c

ALLOY STEEL

Hot Rolled
F.o.b. Mills
Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same price per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Cold finished steel bars drawn or rolled, Pitts., Chi., c.l.	2.30c
Do, del. Detroit	2.575c
Shafting (turned, polished) Pittsburgh	2.30c
Shafting (turned, ground) mill (Depending on size, i 3/16 to 7-inch)	2.65c to 3.10c
Cold finished steel bars, Cleve.	2.25c to 2.35c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland, Ironton base

(Per Pound)	Dealer trade	Large jobbers
Bright plain wire, 6 to 9 gage	2.60c	2.50c
Annealed field wire	2.75c	2.65c
Galvanized wire	3.20c	3.10c
Barbed wire, galvanized	3.40c	3.30c
(Per 100-pound keg)		
Wire nails	$2.75	$2.65
Galvanized nails	4.75	4.65
Polished staples	3.20	3.10
Galvanized staples	3.45	3.35
Cement coated nails	2.75	2.65
Manuf. wire, del. Detroit		
Wire nails, del. Detroit	$2.785 to $2.885	

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland-Ironton base or products made there; Duluth $2 higher; Worcester, Mass., Fairfield, Ala., $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

Anderson, Ind., $1 higher, Chicago $2 higher, Duluth, Birmingham $3 higher.

CUT NAILS, CHAIN PILING

Cut nails, c.l., f.o.b. mills	2.70c to 2.75c
Cut nails, l.c.l. f.o.b. mills	2.80c to 2.85c
Chain, 1-in., proof coil, Pitts.	6 00c
Sheet piling, base, Pittsburgh	2.25c

CAST IRON WATER PIPE

Prices per net ton
Class B pipe

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, New York	38.00 to 40.00
Four-inch, New York	41.00 to 42.00
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN AND TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.35

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24	4.00c to 4.10c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, c.l., Chicago dist.	$6.70 to 6.90 off
Lock: to dealers	85-5 off
Lock: to consumers	85 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 29.00
Light rails, 25 to 45, mill	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	$43.00

BOLTS AND NUTS

Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ¾ x 6 and smaller take 10 per cent lower list.

Eagle list	60 to 70 off

MACHINE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ¾ x 6 and smaller take 10 per cent lower list.

Lag screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off

Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 20, 10 and 5 with 2½ off in bulk.

Tire bolts	60-5 off

Nuts

Semifinished	60 to 70 off

HEXAGON CAP SCREWS

Milled	80-10-5 off
Upset 1 in. diam. and smaller	5 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset 1 in. diam. and smaller	80-10-5 off

RIVETS

Struc., c.l., Pitts-Cleve.	3.10c
Structural, c.l. Chicago	3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED MATERIAL

Prices Per Gross Ton
BILLETS AND BLOOMS
4 x 4-inch base

Pittsburgh, open-hearth	$35.00 to 36.00
Pittsburgh, bessemer	35.00 to 36.00
Youngstown	35.00 to 36.00
Cleveland	34.00
Philadelphia	39.30 to 41.30
Chicago	37.00
Forging, Chicago	42.00
Forging, Pittsburgh	40.00 to 41.00
Forging, Philadelphia	44.30 to 46.30

SHEET BARS

Pittsburgh	$35.00 to 36.00
Youngstown	35.00 to 36.00
Cleveland	35.00
Chicago	37.00

SLABS

Pitts., Young.	$35.00 to 36.00
Cleveland	34.00

WIRE RODS

Pittsburgh, Cleveland	$42.00
Chicago	43.00

SKELP

All grades, Pittsburgh	1.90c to 1.95c

IRON ORE

LAKE SUPERIOR ORE
Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	8.00
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN ORE
Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-8% manganese	11.00 to 11.50
North African low phosphorus	12.00 to 12.50
Swedish foundry or basic, 65%, nominal at	9.00 to 10.00
Spanish and North African basic, 50 to 60 per cent	11.50 to 12.00
Newfoundland foundry, 55%	nominal
Tungsten spot and early fut., short ton unit, duty paid	15.50

MANGANESE ORE

Prices do not include duty of 1 cent per pound of metallic manganese contained.

Brazilian	34 to 36 cents
Indian	34 to 36 cents
Caucasian, (53-55 per cent)	36 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east. tide., gross ton	$20.15

REFRACTORIES

FIRE CLAY BRICK
Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK
Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE
Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	40.00

CHROME BRICK
Net ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	45.00

Pig Iron

Market Moderately Active—Furnace Interests Enter Third Quarter with Good Backlogs—Birmingham Sellers Down to $15.

BUSINESS in the pig iron market has shaped up for third quarter much as producers anticipated. There has been no concerted buying movement, but a steady, week-to-week flow of substantial orders, which have put furnace interests far beyond the worrying stage. A moderate decline in shipments, amounting to about 10 per cent from the May rate indicates the trend. Sales by Cleveland furnace interests in the week amounted to 18,000 tons, compared with 30,000 tons in the week preceding. Sales of 23,000 tons of basic boosted the total tonnage at St. Louis to 30,000 for the week. Pittsburgh reports more interest in the third quarter, while the market in Chicago is quieter than recently. Birmingham furnaces now quoting $15, or 50 cents under the recent minimum.

PITTSBURGH, June 25.—Melters are showing more interest in third quarter pig iron requirements, and contracting has increased. Most of the business is being placed with regular sources of supply, and open market inquiries are not numerous. Westinghouse Electric & Mfg. Co.'s inquiry for Trafford City, Pa., and Cleveland plants still is pending. Current orders are for lots up to 1000 tons, mainly foundry iron. Prices are steady, no concessions being noted from present valley levels of $18.50 for No. 2 foundry and basic, and $19 for bessemer and malleable. Shipments continue active, and show increases to some points. Production by some furnaces still is failing to keep pace with shipments. Stocks are near the lowest level of the year.

Boston, June 25.—Pig iron sellers are trying to hold prices firmly. Mystic Iron Works in the past week obtained $20, base, equivalent to $18.50, Buffalo. The usual price is $18, base, Buffalo. About 6000 tons was sold in this district in the past week. Inquiries include 2000 tons for a Providence, R. I., foundry, and 1100 tons of malleable for a Connecticut melter. General Electric Co. is inquiring for 1900 tons for New England plants.

New York, June 25.—Moderate buying continues in the pig iron market. Foundry iron is easier, delivered prices usually figuring back to around $18, base, Buffalo. The full range is $17.50 to $18, base, Buffalo, for this territory.

Buffalo, June 25.—One new inquiry for 2000 tons of No. 2X foundry iron, wanted by a New England interest, is reported here. Sales show further decline. Competition is forcing an $18, base, on foundry in the East. Buffalo district prices are firm.

Youngstown, O., June 25.—Strong intimations are being received here from Birmingham, Ala., district that sales of No. 2 foundry for third quarter delivery are being made by certain blast furnace interests at $15, Birmingham. Other producers continue to ask $15.50, Birmingham. Current sales in the Valley district are small.

Cleveland, June 25.—Pig iron shipments are running about 10 per cent behind the May rate, due mainly to seasonal slowing up in automotive industry. Leading furnace interests, however, continue to ship all they are making, and their situation is exceptionally good for this season. Sales also are slower, with 18,200 tons for the past week for furnace interests with headquarters here, against 30,000 tons reported last week. An Ohio melter wants 4000 tons for last half, this being the first inquiry received extending beyond third quarter. The same consumer also asks prices on 4000 tons it requires for first half of 1930. Few furnaces are willing to commit themselves that far ahead. Westinghouse Electric & Mfg. Co. has not yet closed on requirements for its Cleveland plant for third quarter. It also is in the market for an unstated tonnage for Trafford City, Pa. One Cleveland maker is practically out of the market for third quarter. Prices are unchanged. Cleveland furnaces continue to quote $18.50, base, for outside delivery and $19 for local.

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts. dist. fur.	19.00
*Basic, del. Pittsburgh	19.63 to 20.13
Basic, Buffalo furnace	18.50
Basic, del. eastern Pa.	20.25 to 20.65
Malleable, valley furnace	19.00
Malleable, Pitts. dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	19.00
Malleabe, Chicago furnace	20.00
Malleable, Buffalo furnace	20.00
Malleable, del. eastern Pa.	22.76 to 24.40
Malleable, Granite City fur.	20.50
No. 1 foundry, Chicago furnace	20.50
No. 1X, Eastern del., Phila.	23.26
No.1X, Buffalo furnace	21.00
No. 2 foundry, valley furnace	18.50
No. 2 fdy., Pitts, dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	19.63 to 20.13
No. 2 plain, Buffalo furnace	19.50
No. 2 foundry, Chicago furnace	20.00
No. 2 fdy. Cleve. fur. for local del.	19.00
No. 2 plain, del., Phila.	22.26
No. 2 plain, Virginia furnace	19.50
No. 2 plain, Buffalo, del. Boston	23.41 to 23.91
No. 2 plain, N. J., tidewater	20.78 to 21.28
No. 2 Alabama, Bir. base	15.00
No. 2 Tenn., Birmingham base	15.00
No. 2 Tenn., del. Cincinnati	18.69
No. 2 Alabama, del. Cincinnati	18.69
No. 2 Alabama, del., Cleveland	21.01
No. 2 Alabama, del., Chicago	21.01
No. 2 Alabama, del. St. Louis	19.42
No. 2X, east. N. J., tidewater	21.28 to 21.78
No. 2X, eastern, del. Phila.	22.76
No. 2X, foundry, Buffalo furnace	20.00
No. 2X, Buffalo, del. Boston	23.91 to 24.41
No. 2X, Virginia furnace	19.50 to 20.00
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.26 to 24.76
Low phos., copper bearing fur.	23.00 to 23.50
Charcoal, Superior, del., Chicago	27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63c, 76c and $1.13 per ton.

CANADIAN PRICES

No. 2 foundry, del. Toronto	24.10
No. 2 foundry, del. Montreal	25.50
Malleable, del. Toronto	24.10
Malleable, del. Montreal	25.50
Basic, del. Montreal	24.50

Silvery iron, Jackson county, O., furnaces, in per cents: 5—$23 to $24; 7—$25 to $26; 8—$26 to $27; 9—$27 to $28; 10—$29 to $30; 11—$31 to $32; 12—$33 to $34; 13—$35 to $36.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$31 to $32; 11—$33 to $34; 12—$35 to $36; 13—$37 to $38; 15—$41.50 to $42.50; 16—$43 to $44.

Detroit, June 25.—Pig iron consumers are displaying more interest in third quarter requirements. Some are covering to the extent of 80 per cent of their second quarter contracts, which is considered good for the season. Melters are beginning to feel more confident over the coming quarter. Shipments in June show a moderate decline from those of May. Iron is coming into west Michigan by water both from Chicago and Lake Erie ports. Producers claim $20.50, Detroit furnace, for pig iron is firm.

Chicago, June 25.—Shipments of pig iron exceed production. Southern iron is quoted nominally at $15 to $15.50, base, Birmingham, but it is understood orders placed in this district have figured below the minimum quotation, with silicon differentials disregarded. Northern iron sales are on the basis of $20, Chicago furnace, for No. 2 foundry and malleable.

June shipments by Chicago district furnaces are ahead of May and promise to be the highest of any June since 1920. The seventh cargo of eastern iron has arrived by vessel, making about 20,000 tons this season. It is estimated 6000 to 7000 tons more is due on orders.

It is reported silvery iron prices have been reduced 50 cents to $1.

Cincinnati, June 25.—Buyers of pig iron continue to await further developments. One northern dealer reports sales of 4000 tons in the past week. Southern furnaces are quoting $15, base, Birmingham.

St. Louis, June 25.—After weeks of dullness, pig iron sales in the past several days totaled about 30,000 tons, the largest for any similar period in over two months. The recent decision suspending a reduction in southern freight rates, banished hope of price concessions. Shipments continue heavy. Those made by the leading local producer since June 1 are above the May

(*Concluded on Page* 1744)

The Market Section

Coke

Foundries Reducing Specifications—Shipments to Furnaces Holding Up—Spot Sales Quiet

SPECIFICATIONS for foundry coke have fallen off, and the spot market is quiet. Blast furnace interests are renewing contracts for a month or two ahead. Shipments to furnaces are holding up. Prices for beehive and by-product coke generally are unchanged. Merchant ovens in the Connellsville district have reduced output 4 per cent in the past 30 days.

Pittsburgh, June 25.—Beehive furnace coke continues steady. Spot market sales are quiet, but contracts are being renewed for a month or two ahead, and the movement against old orders is fair. Production by merchant ovens still is declining, but the drop the past 30 days is under 4 per cent. Foundry coke is quiet and specifications have diminished. Spot market is dull, but prices are unchanged. Little activity is noted in heating coke. Jones & Laughlin Steel Corp. has announced plans for building 81 more by-product ovens at its Aliquippa works, making a total of 202. The corporation has been forced to supplement its own by-product coke output with beehive purchases, and additional capacity may remove it from the market.

Production of coke in the Connellsville region for the week ended June 15 was 110,450 tons, compared with 110,190 tons the preceding week, according to the *Connellsville Courier*.

Boston, June 25.—Foundries continue to order coke sparingly, indicating a reduction in the melt. Prices are unchanged.

New York, June 25.—While spot demand for foundry coke continues slack, specifications on contracts are brisk. Prices are unchanged.

Cincinnati, June 25.—Specifications for foundry coke have diminished. New business consists mainly of small spot orders. Prices are steady.

St. Louis, June 25.—Considerably less than the usual seasonal slowing down in demand for metallurgical coke is noted. Continued heavy melt is reflected in current shipments, and willingness of all users to take contract quotas as due. Some extra orders have been placed for fill-in purposes. By-product producers report an increased volume of contracting by melters in the West and Southwest. Prices are steady.

Birmingham, Ala., June 25.—Coke continues fairly active. The by-product foundry grade is $5, ovens. Practically all by-product coke ovens are in operation in this district.

Coke Prices

Prices per Net Ton

Beehive Ovens	
Connellsville furnace	$2.75 to 2.85
Connellsville foundry	3.75 to 4.85
New River foundry	6.00 to 6.50
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.75
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England del	11.00
St. Louis del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell, basis	6.50
Portsmouth, O., ov., Connell, basis	6.50
Buffalo, ovens	8.75
Detroit, ovens	9.00
Philadelphia, del.	9.00

Ferroalloys

Shipments Continue Heavy—Market Is Firm

Pittsburgh, June 25.—Shipments of ferromanganese and spiegeleisen continue unusually heavy. Single carload orders from small consumers take the current prices of $109.79, delivered Pittsburgh, for ferromanganese, and $34 for 19 to 21 per cent spiegeleisen. Demand for special ferroalloys has declined slightly.

New York, June 25.—Shipments of ferromanganese and spiegeleisen have dropped slightly from the rate in the first five months of the year. Some new spot carload sales of spiegeleisen have been made at $34, furnace, for the 19 to 21 per cent grade. Ferromanganese continues firm at $105, duty paid, tidewater. Special ferroalloys are unchanged.

Refractories

Active Demand and Much Prospective Work Swells Production

REFRACTORIES PRICES, PAGE 1734

Pittsburgh, June 25.—Refractories continue active with June sales above May. Repair work in steel furnaces has been heavy for several months, and the rate at which steelmaking facilities have been pushed since the first of the year is being reflected in lining failures. There has been considerable new construction work this year and although projects have been less numerous of late, much is pending and in prospect. The Aluminum Co. of America will require a large number of brick for its new plant at Alcoa, Tenn., now under construction. This material recently was placed. Refractories for the new Ambridge, Pa., plant of the A. M. Byers Co. remain pending. Weirton Steel Co. may enlarge its two blast furnaces at Weirton, W. Va. By-product coke ovens are under construction at the Neville Island plant of the Davison Coke & Iron Co. and a battery is in prospect for the Pittsburgh Steel Co. Operations of refractory producers are heavy but there still is pressure for shipment on occasions. Prices continue steady and unchanged, with first quality fire clay brick quoted $43 to $46 and second quality material $8 less. Silica brick holds at $43, with chrome brick $45.

Bolts, Nuts, Rivets

Third Quarter Contracting in Good Volume, Near Completion

NUT AND BOLT PRICES, PAGE 1734

Pittsburgh, June 25.—Contracting for third quarter requirements of bolts, nuts and rivets is nearing completion and is in good volume. Current prices of 60 to 70 off for bolts and nuts and 3.10c, Pittsburgh, have met little opposition. Specifications have not slackened materially since June 1 and June business is expected to compare favorably with May. Operations hold well at 70 to 75 per cent.

Chicago, June 25.—Steady progress is being made in third quarter contracting for nuts, bolts and rivets, on the quotations extended from second quarter. Quotations for large structural rivets are reported steady at 3.20c, Chicago, in carload lots, and small rivets are quoted 70 to 70 and 10 off.

Officers have been elected for the coming year by the Chicago chapter of the American Society for Steel Treating. They are: Chairman, A. M. Steever, Great Lakes Forging Co.; vice chairman, D. L. Colwell, Stewart Die Castings Corp.; and secretary-treasurer, J. A. Comstock, Peoples Gas Light & Coke Co. Ten members of the executive committee also were chosen.

Ferroalloy Prices

(In dollars, except ferrochrome)

Ferromanganese, 78 to 82 per cent, tidewater, duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent, domestic furnace, spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do, less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.35 to 1.45
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producer's plant, net ton	160.00
Do., one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Quantity diff. apply on 100 tons and over.
*These prices contract, spot $5 higher.

The Market Section

Scrap

Slight Further Decline in Important Grades—Large Supply Balances Heavy Consumption

IN SPITE of unusually heavy consumption by steel mills, current supply of iron and steel scrap is sufficient to prove a weight and prices are slipping slightly. Sales of tonnage recently have been at concessions of 25 to 50 cents. Large tonnages are about to come out soon.

Chicago, June 25.—Heavy melting steel has dropped 25 cents following sale of a substantial tonnage at $15.25. The range now being quoted generally is $14.75 to $15.25. Sympathetically, several others grades have declined 25 to 50 cents. Yard dealers are accumulating virtually no scrap except cast grades for gray iron foundries, for which there is little market. Shipments on orders are heavy but fresh tonnage booked by dealers is light. Over 1500 tons of cast borings have been sold at $10.25, a drop of 25 cents. Railroad malleable is showing further depression, and some dealers have revised downward their asking prices on rail crops by 50 cents. No. 1 railroad wrought likewise has dropped 50 cents. Short selling is much less marked.

Boston, June 25.—Firmness in scrap prices has developed a better demand and sellers are more inclined to release tonnage. Shipments out of New England made a larger tonnage in the past week. Heavy melting steel is scarce and orders filled are at the top price, as a rule.

New York, June 25.—A sale of No. 1 heavy melting steel has been made

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	12.00 to 12.50
Boston, dealers	12.00 to 12.25
Boston, No. 2	10.00 to 10.50
Buffalo, No. 1	16.00 to 17.50
Buffalo, No. 2	14.50 to 14.75
Chicago	14.75 to 15.25
Cincinnati, deal.	13.00 to 13.50
Cleveland, No. 1	15.00 to 15.50
Cleveland, No. 2	14.25 to 14.50
Detroit, No. 1 deal.	13.50 to 14.00
Detroit, No. 2 deal.	11.50 to 12.00
East Pa., del. mill	16.50
N. Y., deal. R. R.	12.50 to 13.35
N. Y., deal. yd.	8.25 to 9.25
Pittsburgh, No. 1	18.00 to 19.00
St. Louis, No. 1	14.00 to 14.25
Valleys, No. 1	17.50 to 18.00

COMPRESSED SHEETS

Buffalo (dealers)	14.50 to 14.75
Chicago	13.25 to 13.75
Cleveland	15.00 to 15.50
Detroit, dealers	14.00 to 14.50
E. Pa. new mat.	15.00
Pittsburgh	18.00 to 18.50
Valleys	17.50 to 18.00

BUNDLED SHEETS

Buffalo	12.00 to 12.50
Cincinnati, deal.	10.75 to 11.25
Cleveland	12.50 to 13.00
Eastern Pa.	11.50
Pittsburgh	16.00 to 16.50
St. Louis	10.00 to 10.50

SHEET CLIPPINGS LOOSE

Chicago	8.75 to 9.25
Cincinnati	9.50 to 10.00
Detroit, dealers	8.50 to 9.00
St. Louis	10.00 to 10.50

STEEL RAILS, SHORT

Birmingham	14.00 to 14.50
Boston	10.50 to 11.25
Buffalo	19.00 to 19.25
Chicago (3 feet)	18.00 to 18.50
Chicago, 2 ft. and under	18.50 to 19.00
Cincinnati, deal.	18.50 to 19.00
Detroit, dealers	17.00 to 17.50
Pittsburgh (3 ft.)	20.00 to 21.00
Pittsburgh, 2 ft. and under	20.50 to 21.50
St. Louis	16.50 to 17.00

STOVE PLATE

Birmingham	12.50 to 13.00
Boston consumers	11.50 to 12.00
Buffalo	12.00 to 12.50
Chicago, net	11.50 to 12.00
Cinn., deal., net	9.25 to 9.75
Detroit, net deal.	9.50 to 10.00
Eastern Pa.	11.50 to 12.00
N. Y., deal., mill	8.00 to 8.50
St. Louis	12.50 to 13.00

COUPLERS, SPRINGS

Buffalo	19.00 to 19.25
Chicago	16.50 to 17.00
Eastern Pa.	20.50 to 21.50
Pittsburgh	21.00 to 21.50
St. Louis	14.75 to 15.25

ANGLE BARS—STEEL

Chicago	17.25 to 17.75
St. Louis	13.50 to 14.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	19.00 to 19.50
Cleve. billet and bloom crops	17.50 to 18.00
Eastern Pa.	21.00 to 22.00
Pitts. billet and bloom crops	22.50 to 23.50
Pitts., sheet bar crops	20.50 to 21.50

FROGS, SWITCHES, GUARDS

Chicago	16.50 to 17.00
St. Louis	15.00 to 15.50

SHOVELING STEEL

Chicago	14.75 to 15.25
Cleveland	11.00 to 11.50
Detroit, dealers	9.00 to 9.50
St. Louis	13.00 to 13.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 11.00
Boston, dealers	11.25 to 12.00
Buffalo, No. 1	13.50 to 14.00
Buffalo, No. 2	16.00 to 16.50
Chicago, No. 1	14.85 to 15.40
Chicago, No. 2	14.75 to 15.25
Cinn., No. 2	13.00 to 13.50
Eastern Pa.	16.00 to 16.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 2	18.00 to 19.00
St. Louis, No. 1	13.00 to 13.50
St. Louis, No. 2	13.50 to 14.00

SPECIFICATION PIPE

Boston	10.00 to 10.50
Eastern Pa.	15.50
New York, deal.	11.25

BUSHELING

Buffalo, No. 1	14.50 to 14.75
Chicago, No. 1	13.50 to 14.00
Cinn., No. 1 deal.	11.00 to 11.25
Cinn., No. 2	6.75 to 7.00
Cleveland, No. 1	13.50 to 14.00
Cleveland, No. 2	11.00 to 11.25
Detroit, No. 1 deal.	12.25 to 12.75
St. Louis, No. 1	10.00 to 10.50
Valleys, new No. 1	16.00 to 16.50

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston	6.50 to 6.75
Buffalo	7.25 to 7.75
Chicago	8.00 to 8.50
Cincinnati, deal.	8.50 to 9.00
Cleveland	9.00 to 9.50
Detroit	7.50 to 8.00
Eastern Pa.	11.50
New York, deal.	7.50
Pittsburgh	11.50 to 12.00
St. Louis	8.00 to 8.50
Valleys	11.00 to 11.25

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	6.00 to 6.25
Buffalo	11.00 to 11.50
Cincinnati, deal.	9.00 to 9.25
Cleveland	10.75 to 11.00
Detroit, dealers	8.75 to 9.25
Eastern Pa.	10.50 to 11.00
New York, deal.	7.00 to 7.25
Pittsburgh	12.00 to 12.50

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	7.00 to 8.00
Boston chem.	10.00 to 10.25
Boston, dealers	6.50 to 6.60
Buffalo	11.00 to 11.50
Chicago	9.75 to 10.25
Cincinnati, deal.	9.00 to 9.25
Cleveland	10.75 to 11.00
Detroit, dealers	8.75 to 9.25
Eastern Pa.	11.50 to 12.00
Eastern Pa., chem.	14.50
New York, deal.	7.00 to 7.25
Pittsburgh	12.00 to 12.50
St. Louis	9.50 to 10.00

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	12.25 to 12.75
Chicago, net	11.50 to 12.00
Cincinnati	10.00 to 10.50
Eastern Pa.	12.00
New York, deal.	8.75 to 9.25
St. Louis	12.50 to 13.00

FORGE FLASHINGS

Boston dealers	9.50 to 10.25
Buffalo	13.75 to 14.25
Chicago	10.50 to 11.00
Cleve. over 10 in.	13.25 to 13.50
Detroit	12.00 to 12.50

FORGE SCRAP

Boston, dealers	8.75 to 9.00
Chicago	18.00 to 18.50
Eastern Pa.	14.00

ARCH BARS AND TRANSOMS

Chicago, net	20.50 to 21.00
St. Louis	21.50 to 22.00

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal	6.75 to 7.00
Buffalo	14.50 to 15.00
Chicago	13.00 to 13.50
Cleveland	12.50 to 13.00
Eastern Pa.	14.50 to 15.00
Pittsburgh	15.75 to 16.75
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston, ship point	16.50 to 17.00
Buffalo	19.50 to 20.00
Chicago	18.50 to 19.05
Eastern Pa.	23.00 to 23.50
Pittsburgh	21.50 to 22.00
St. Louis	19.00 to 19.50

SHAFTING

Boston, ship point	14.00 to 14.25
Chicago	17.10 to 17.65
Eastern Pa.	19.00 to 20.00
New York, deal.	14.00 to 14.50
St. Louis	18.50 to 19.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	11.00 to 12.00
Boston, iron	14.00 to 14.50
Buffalo, iron	14.00 to 14.50
Buffalo, steel	19.00 to 19.25
Chicago, iron	14.00 to 14.50
Chi., rolled steel	18.50 to 19.00
Cincinnati	12.50 to 13.00
Eastern Pa. cast.	16.50
Eastern Pa., rolled	20.50 to 21.50
N. Y., iron, deal	12.00 to 12.50
Pittsburgh, iron	16.25 to 16.75
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	14.00 to 14.50
St. Louis, steel	17.00 to 17.50

No. 1 CAST SCRAP

Birmingham, cup.	13.00 to 14.00
Buffalo	15.75 to 16.25
Boston, textile	16.00 to 16.50
Chicago, mach.	16.25 to 16.80
Chicago, railroad	15.25 to 15.66
Chicago, agri.	14.65 to 15.20
Cincinnati, Mach. cupolas, gross	19.50 to 20.00
Cleveland, cupola	16.00 to 16.50
Detroit, net, deal.	12.00 to 13.00
East Pa., cupola	17.00
N. Y., cup., deal.	13.00 to 13.50
N. Y., del. local foundries	17.00
Pittsburgh, cupola	15.00 to 16.00
San. Fran., del.	13.50 to 14.00
Seattle	15.50 to 16.00
St. L. No. 1 mach.	15.25 to 15.75
St. Louis, No. 1	14.50 to 15.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	12.75 to 13.25
Cleve., breakable	12.50 to 12.75
Detroit, auto, net dealers	12.00 to 13.00
Detroit, break. deal	9.00 to 9.50
Eastern Pa.	15.00
New York, deal.	10.50 to 11.00
Pittsburgh	13.00 to 13.50

MALLEABLE

Boston, railroad	18.50 to 19.00
Buffalo	18.00 to 18.50
Chicago, agri.	16.00 to 16.50
Chicago, railroad	17.50 to 18.00
Cinn., R. R., deal	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail.	17.50 to 18.00
Detroit auto deal.	15.00 to 15.25
St. Louis, rail.	15.00 to 15.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	13.50 to 14.50
Rails, scrap, Boston	10.50 to 11.50
Buffalo	16.50 to 17.00
Chicago	17.50 to 18.00
Eastern Pa.	17.00 to 17.50
New York	12.25 to 12.75
St. Louis	15.50 to 16.00

LOCOMOTIVE TIRES

Chicago, cut	18.50 to 19.00
St. Louis, No. 1	16.00 to 16.50

LOW PHOS. PUNCHINGS

Chicago	17.00 to 17.50
Pittsburgh	20.00 to 21.00

to an eastern Pennsylvania mill at $16.50, delivered, an advance of 50 cents. Close to 5000 tons were reported involved. Heavy melting steel is inclined to be firmer at other points in the East. Prices on other grades are steadier and the market is more stable following recent slight declines. Mills generally are buying close to needs.

Philadelphia, June 25.—A consumer has purchased 5000 tons of No. 1 heavy melting steel at $16.50 delivered, an advance of 50 cents. Steel axles are slightly easier at $23 to $23.50 delivered. Heavy breakable cast has sold off 50 cents, now being on the basis of $15 delivered. No. 1 cupola cast is firmer and in a number of instances has brought the full $17 which recently has been the top of the market. Compressed sheets, from new material, now are quoted at $15 delivered.

Buffalo, June 25.—Two purchases of No. 1 heavy melting steel, of fair tonnage, have been made at $17 in one case to probably $17.50 in the other. Otherwise Buffalo's scrap market is dormant. Specialty prices continue to sag slightly as dealers find markets lacking buying support.

Cleveland, June 25.—Dullness in iron and steel scrap is accentuated by declaration of the leading consumer all shipments by rail are to be cut off beginning next week. Other consumers continue to take fair consignments. Prices generally are nominal with No. 1 heavy melting steel at $15 to $15.50. The Youngstown market is reported relatively strong with both melting steel and compressed sheets quoted at $17.50 to $18.

Detroit, June 25.—Some dealers look for a stronger market. They visualize unusual consumption, especially of steel mill grades, and lighter supplies in this district. Also, yard stocks, from which heavy shipments have been made in recent months, are now depleted. Cast grades continue exceptionally weak, due in part to lost markets through increased briquetting of borings. Opinion differs on the value of compressed sheets, some dealers believing the market to be $13.50 to $14, while others say $14 has failed to develop material. No. 1 steel is $13.50 to $14. Closing of some large lists this week will clarify the market.

Cincinnati, June 25.—The iron and steel scrap market is characterized by continued firmness. Prices have continued for three weeks. Dealers experience slight difficulty in obtaining good scrap to apply on contracts.

Toronto, Ont., June 25.—The summer holiday season has brought a lull in iron and steel scrap buying. Spot demand continues in fair volume, but little forward buying is reported. The available supply of scrap is more plentiful and dealers report no shortage at prevailing prices.

St. Louis, June 25.—Iron and steel scrap holds steady, with demand generally fair. Some mills are buying in quite large quantities, and would take much more were the material available and slight concessions in price obtainable.

Birmingham, Ala., June 25.—Heavy melting steel holds at $12.50 per ton for best quality but this price, as well as others, still is unsettled.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$22.00
Steel axles	20.00
Car wheels	16.00
Stove plate	13.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	15.00
Iron axles	17.00
Heavy melting steel	9.50
Turnings	7.50
No. 1 mach. cast (net)	16.00
Malleable (net)	12.50

Pittsburgh, June 25.—Sustained steelmaking operations give steady tone to iron and steel scrap market despite month-end quiet. Inventory has slowed buying though tonnages are being placed and some melters have returned to the market. Recent sales of heavy melting steel have been at $18.25 to $18.75. Variation in quality has widened the spread. The Pennsylvania list closing July 1 contains about 46,000 net tons, including approximately 8400 tons of heavy melting steel.

Semifinished Steel

Market Settling to $35 for Sheet Bars for Third Quarter

SEMIFINISHED STEEL PRICES, PAGE 1734

Pittsburgh, June 25.—Contracting for third quater requirements of semifinished steel is held in abeyance because consumers have covered through July and in some instances into August. Some producers intimate they will accept third quarter business at $35 in contrast to the current price of $36 for spot material. Others have stated that their price will continue $36. Current contracts were written at $34 for billets and slabs and $35 for sheet bars. Wire rods are firm and active at $42.

Youngstown, O., June 25.—Keen competition from nearby districts is tending to bring out a price of $35, Pittsburgh and Youngstown, for billets, slabs and sheet bars for third quarter. However, the $36 price still appears in some instances. Sales for third quarter are expected to begin within a few days; some negotiations now are pending.

Cleveland, June 25.—While prices for third quarter have not been clarified by sales or contracts, the leading local producer indicates it will continue in effect its second quarter price of $35 for sheet bars, and advance billets and slabs from $34 to $35, Cleveland and Youngstown basis. Reports from the valley district tend to substantiate $35 for all three grades. A Cleveland mill asked valley makers for 1000 tons of sheet bars to increase its reserve stock, but was unable to obtain the tonnage.

Chicago, June 25.—Several third quarter contracts for billets and sheet bars have been written on the basis of $37, Chicago. A moderate tonnage has been closed for third quarter.

Operating Rates

Chicago Maintains 98, Pittsburgh at 95, Valley Indicates Record

Chicago—Recent hot weather had little effect on the district's ingot output, which remains at about 98 per cent. Sheet mill operations increased to about 85 to 90 per cent. Bar plate and structural mills are close to capacity, while hot and cold rolled strip mills are 70 to 75 per cent. Rail mills are about 65 per cent.

Pittsburgh—Steel ingot production is held close to 95 per cent. Sheet mill output has declined to around 90 per cent and tin plate is slightly below that figure. Pipe mills are unchanged at 60 to 70 per cent for welded and 70 to 90 per cent for seamless.

Buffalo—Steelworks continue at peak with 33 of 37 open-hearth furnaces melting.

Youngstown, O.—With the valley's high rate of operations continued through the final week of June, a record seems assured for this month. Independents operate 48 of 51 open-hearth furnaces and continue bessemer operations at 75 per cent. Steel corporation subsidiaries continue to maintain a 90 per cent rate. Tin mill operations are 75 per cent and 90 per cent for independents and Steel corporation, respectively. Girard puddle mill is on a 60 per cent schedule, with its finishing mills 100 per cent active.

Detroit Plant Proceeds

Detroit, June 25.—With the award of 25,000 to 27,000 tons of structural steel for its plant at Ecorse, Mich., to the McClintic-Marshall Co., the Great Lakes Steel Corp.'s projected plant is taking form.

Excavating and filling is under way and piles for the foundation are being driven. The project contemplates six open-hearth furnaces. Contract for the blooming and strip mills has been placed with the Mesta Machine Co., Pittsburgh. Initial production is scheduled for July 1, 1930.

Improvements that will increase production are under way at the Michigan Steel Corp.'s plant, owned by interests identified with the Great Lakes corporation.

Heads Birmingham Plant

Lawrence D. Weaning, who was vice president and general manager of the Variety Iron & Steel Works Co., Cleveland, is now general manager at Birmingham, Ala., for the Reeves Bros. Co., Alliance, O., plate fabricator.

Bars

Deliveries Slightly Easier but Backlogs Are Reduced Slowly—New Tonnage Being Entered

SLACKENING in demand for soft steel bars is not sufficient to make deliveries easy and at Chicago 10 to 12 weeks is the best promise obtainable except on a few sizes, where six to eight weeks can be done. Shipments at the current high rate make little progress in reducing backlogs. Second quarter prices are firm for third quarter bookings.

BAR PRICES, PAGE 1733

Chicago, June 25.—Bar mill deliveries are slightly easier, but shipments make slow headway against specifications. It has been possible in the past several days to schedule tonnage with one producer for rollings late in July and early in August, thus providing six to eight weeks' shipments on some sizes and sections. Average bar mill deliveries by this producer are 10 to 12 weeks, while another mill names 12 weeks as a minimum. Much third quarter tonnage has been contracted, although sales sheets for the past week show a drop from the preceding period.

Second quarter quotations, on the basis of 2.05c to 2.15c, Chicago, have been reaffirmed for iron bars. Bar iron mills have several weeks' backlogs, largely in railroad tonnage, and the outlook for 30 days is favorable. Rail steel bars are quiet, but tonnage on books assures steady operations for some time. Rail steel bars to the manufacturing trade are 1.95c, Chicago Heights.

Soft steel bars are 2.05c to 2.15c, Chicago, with 2.05c considered largely as the base price.

New York, June 25.—Specifications for steel bars although not so good as the average in recent weeks, show only a small drop. Although tonnage being specified is somewhat smaller mills appear to be practically as congested as they were. The market on bars continues firm at 1.95c to 2.00c base Pittsburgh, equivalent to 2.29c to 2.34c, base, delivered New York.

Pittsburgh, June 25.—Bar demand is tapering although the decline is gradual. Second quarter contracts are being well specified although not as fully as at the end of first quarter. Third quarter contracting is fairly active with old prices generally being reaffirmed. Tonnage going to automotive interests continues to decline although other consuming lines are holding up demand fairly well.

Cleveland, June 25.—Shipments of soft steel bars are not markedly lower than in May but incoming business is. Demand from all classes of users is shrinking, though not more than could seasonably be expected. Efforts to get business are intensified. Outside mills quote 1.95c to 2.00c, delivered, while local mills quote 1.90c to 1.95c.

Detroit, June 25.—Some headway has been made in closing third quarter requirements for soft steel bars. Many consumers now have a clearer view of their third quarter needs, but continuance of the second quarter price of 1.95c, Pittsburgh, to general users militates against haste to cover. A fair volume of business is going to the Cleveland maker, quoting on a Cleveland base. Automotive requirements for bars, while receding, continue seasonally high.

New officers of the Worcester chapter of the American Society for Steel Treating are as follows: Chairman, Carl G. Johnson, instructor, Worcester Polytechnic institute; vice chairman, William Hague, superintendent, Arter Grinding Co.; and secretary-treasurer, Milton H. Frommann, metallurgist, Reed & Prince Mfg. Co. An executive committee of seven members also was chosen.

Exports Off; Imports Up

Washington, June 25.—Exports of iron and steel from the United States in May totaled 261,516 gross tons, a reduction of 16,064 tons from the 277,580 tons of April. In the first five months exports totaled 1,344,028 tons, against only 1,096,595 tons in the same period of 1928.

May imports of iron and steel were 74,272 tons, or 19,935 tons over April. For five months imports have totaled 294,210 tons, compared with 327,486 tons a year ago.

Principal increases in May imports were in pig iron, cast iron pipes, shapes, hoops and strip. May exports showed losses in tin plate, rails and steel bars, with a good gain in scrap.

Plates

Market Is Active—Third Quarter Contracts Placed at Chicago—Sales at Pittsburgh Heavy

SEVERAL heavy contracts for plates for third quarter were closed at Chicago during the week. Orders included 8000 tons for oil tanks. A western railroad is in the market for 9000 to 10,000 tons of plates and shapes for repair work. Deliveries from Pittsburgh mills are extended several months. Buying there is ahead of the May rate.

PLATE PRICES, PAGE 1733

Chicago, June 25.—More plate tonnage is being added to mill books and the delivery position is unrelieved. One producer has taken 6000 tons of oil tankage, and another 2000 tons of miscellaneous tank work for the Southwest. Welded pipe tonnage may figure in an iquiry for a 109-mile, 18-inch gas line for central Kansas to be purchased soon. From 9000 to 10,000 tons of plates and shapes are on inquiry for car repair work for a western railroad. Several heavy contracts for third quarter were closed. Little mention is made of the 2.15c, Chicago, quotation in plate contracts now being closed.

Pittsburgh, June 25.—Delivery on plates from this district are well extended, for one interest late August or early September. Buying for miscellaneous purposes is slightly ahead of the May tonnage. Several additional orders for steel barges totaling 1400 tons, have been placed. Sold-up condition of barge builders is reflected in the fact on recent business delivery extending as far as 20 weeks is asked, with the average three to four months. The price continues 1.95c, Pittsburgh.

Cleveland, June 25.—Plate demand is fairly active in moderate tonnages. The 1600 tons of 120-inch plates for a 54-inch pipe line at Detroit are being rolled by Lukens Steel Co. for United Welding Co., Middletown, O. A car ferry for Wabash railroad, taking 2000 to 2500 tons, mainly plates was awarded the Toledo Shipbuilding Co. Plates are firm at 1.95c, Pittsburgh, and third quarter contracting virtually is complete.

New York, June 25.—Bids were to be opened today by the New York board of water supply on a pipe line, 72 inches and smaller diameters, requiring about 1600 tons of plates. The board is expected to ask for bids next week on another pipe line requiring a fair tonnage. Miscellaneous demand for plates continues good. Prices are unchanged at 1.95c to 2.05c, base, Pittsburgh, or 2.05c to 2.15c, base, Coatesville. New York Central railroad is in the market for third quarter requirements of plates.

Philadelphia, June 25.—Plate demand is smaller, but unusual for this time of the year. Eastern mills continue to operate 80 to 90 per cent. Most mills can ship fairly promptly. Prices continue firm.

Birmingham, Ala., June 25.—A con-

siderable tonnage of plates is being used in this district. Birmingham Tank Co. is operating day and night producing tanks of various sizes, mainly for filling stations.

CONTRACTS PLACED

2500 tons, six 118,000-barrel tanks for Texas Oil Co., Los Angeles, to Lacy Mfg. Co.
2000 to 2500 tons (mostly plates) car ferry for the Wabash railroad, to Toledo Shipbuilding Co.
1600 tons, plates, for 54-inch water pipe line at Detroit, to Lukens Steel Co., through United Welding Co., Middletown, O.
600 tons, plates and shapes, four merchandise barges for Commercial Transportaton Co., New Orleans; to Dravo Contracting Co.
500 tons, plates and shapes, five barges for U. S. Engineers, Cincinnati; to Dravo Contracting Co.
500 tons, Diablo dam penstock, Seattle, to Commercial Boiler Works.
300 tons, plates and shapes, two cargo box barges for Rodgers Sand Co., Pittsburgh; to Riter-Conley Co.
110 tons, Cushman dam penstock, in Washington, to Commercial Boiler Works.

CONTRACTS PENDING

100 tons, 54-inch riveted pipe, East Bay Municipal Utility district, Oakland, Calif. Bids July 10.

Testing Society Holding Annual Meeting

Atlantic City, N. J., June 25.—The American Society for Testing Materials opened its thirty-second annual meeting here this afternoon with a business session. Announcement was made that T. D. Lynch, consulting metallurgical engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., had been elected president for the coming year and F. O. Clements, technical director, research laboratories, General Motors Corp., Detroit, vice president.

New members of the executive committee include G. B. Haven, professor of machine design, Massachusetts Institute of Technology, Cambridge, Mass.; C. R. Hook, vice president and general manager, American Rolling Mill Co., Middletown, O.; H. E. Smith, engineer of materials, New York Central lines, New York; and G. E. Warren, assistant general manager, Portland Cement association, Chicago.

Bar Iron Wage Holds

Wages in bar iron mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will be based on an average sales price of 2.00c for July and August, it was determined Tuesday. The rate is unchanged from the preceding two months.

An illuminated sign to give directions to the Milwaukee airport is being erected on the Milwaukee sheet mill of the Inland Steel Co., Chicago.

Pipe

4301 Tons Let in West—Washington to Buy 3015 Tons—Steel Pipe Demand Good

LOS ANGELES divided 4301 tons of cast pipe among three makers and wants 2573 tons more. Wood and Glamorgan companies are low bidders on Washington's 3015 tons. Oakland, Calif., wants 2331 tons. Steel and electric welded pipe will compete with cast on 109 miles of 18-inch for a Kansas line. Canada's 500-mile gas line may go ahead. Steel pipe demand is sustained.

PIPE PRICES, PAGE 1734

Pittsburgh, June 25.—Demand for tubular products is well maintained. Drilling in the oil country is active, particularly Oklahoma. General merchant pipe moves at about the usual rate for this season. Some line pipe projects are pending. None has reached the awarding stage. The 500-mile gas line project in Saskatchewan and Manitoba, Canada, sponsored by Imperial Oil Co., subsidiary of Standard Oil Co. of New Jersey, may now be carried through.

Locomotive and boiler tubing, as well as mechanical tubing, continue active despite the decline in automotive production with consequent restricted demand in the latter product. Operations are steady and unchanged.

New York, June 25.—Eastern cast pipe shops are operating slightly better than 60 per cent. The nominally firm price, $39 to $40 delivered, for 6-inch class B pipe is being cut, creating an uncertain price structure. Awards were light this week. United States Pipe & Foundry Co. took 400 tons of 20-inch cast pipe for Brooklyn, N. Y. A fair tonnage remains unclosed, but inquiry is off. Private buying is fair.

Cleveland, June 25.—While May pipe tonnage was beyond all expectations June's total will be somewhat lower. Miscellaneous demand keeps up fairly well, but the market lacks large requirements. Pipe for the Cleveland club, about 250 tons, went to National Tube Co.

Chicago, June 25.—Alternate bids have been received on 109 miles of 18-inch pipe for a natural gas line in central Kansas on cast iron, steel and electric welded pipe. Cast iron pressure pipe orders are light. A number of contractors' jobs have been closed in the Detroit area, and Plymouth, Ind., has awarded a contract for 225 tons. A small tonnage was awarded by Oak Park, Mich. Bids may be received this week on both Hinsdale and Peoria, Ill., sewage disposal projects. Prices for 6 to 24-inch diameter cast pipe remain steady at $37 to $38, base, Birmingham.

Birmingham, Ala., June 25.—New lettings have been received which warrant steady operation of foundries making cast iron pressure pipe. Shipments are steady and go in all directions. Quotations are firm at $37 to $38 on 6-inch and over sizes. Yard stocks are low.

CONTRACTS PLACED

4301 tons, Los Angeles, allocated as follows: 1249 tons 6-inch class B to McWane Cast Iron Pipe Co.; 2239 tons, 6 to 12-inch class B, to American Cast Iron Pipe Co. and 713 tons 8-inch class B, to National Cast Iron Pipe Co.
400 tons, 20-inch cast pipe, Brooklyn, N. Y., to United States Pipe & Foundry Co.
225 tons, 4 to 12-inch pipe for Plymouth, Ind., to Columbia Construction Co.
200 tons, 6 to 8-inch pipe for Oak Park, Mich., awarded through contractor.

CONTRACTS PENDING

3015 tons 8 to 20-inch class B and 186 tons of fittings, Washington; R. D. Wood & Co., and Glamorgan Pipe & Foundry Co., low bidders.
2331 tons, 6 to 20-inch class B or centrifugal pipe, East Bay municipal utility district, Oakland, Calif. Bids July 10.
1425 tons, 8-inch class B, Los Angeles. Bids June 25.
1148 tons, 24-inch class C, Los Angeles. Bids June 25.
217 tons, 6 to 12-inch class B, improvement, Atlantic Street, Long Beach, Calif. Bids opened.
110 tons, cast pipe for Brooklyn, N. Y., in addition to several hundred tons of steel pipe recently offered for bids.
109 miles 18-inch gas line for central Kansas. Bids asked on steel as well as cast iron and electric welded.
Several hundred tons steel pipe for Brooklyn, N. Y. Bids asked.
Unstated tonnages for sewage disposal works at Hinsdale and Peoria, Ill.

Sponsors Bridge Award

Sponsored by the American Institute of Steel Construction Inc., New York, an award will be made to the designers and builders of that steel bridge in the United States or Canada which most artistically solves a traffic problem. A jury of five men has been selected to determine the recipient for 1929. All steel bridges completed and opened to traffic during 1928 will be eligible for the first annual award. The bridge which is selected by this jury will be decorated with a bronze plaque and suitable certificates will be awarded to the engineer, architect and others engaged in its construction. Formal announcement of the jury's selection will be made at the annual convention of the American Institute of Steel Construction Inc., in November, at Biloxi, Miss.

Workmen's compensation rates in

Georgia will be reduced about 10 per cent July 1 for foundries, machine shops and miscellaneous metal trades.

Tin Plate

Specifications Smaller — Orders for August Are Normal

TIN PLATE PRICES, PAGE 1734

Pittsburgh, June 25.—Specifications for tin plate are slightly less active, following the placing of tonnage for August requirements of canmakers. Business for that month is in about the usual seasonal volume. Operations for the district are up a few points, the average now being slightly below 90 per cent. Tin plate continues $5.35 per 100-pound base box, Pittsburgh.

Iron Ore

Movement Continues Heavy—Consumption Increased in May

IRON ORE PRICES, PAGE 1734

Cleveland, June 25.—Lake Superior iron ore continues to move forward from lower lake docks to furnaces at a rapid rate. Consumption increased 584,702 tons in May over April, as shown by the following report from the Lake Superior Iron Ore association:

	Tons
Ore consumed in April	5,417,491
Ore consumed in May	6,002,193
Increase in May	584,702
Ore consumed in May, 1928	4,947,768
Ore on hand at furnaces June 1, 1929	15,274,683
Ore on Lake Erie docks June 1, 1929	3,871,191
Total at furnaces and Lake Erie docks June 1, 1929	19,145,874
Total, June 1, 1928	18,876,721

The first of three 600-foot bulk freight carriers building at the Lorain, O., yard of American Shipbuilding Co. for Pittsburgh Steamship Co. was launched June 22. The steamer was named for William G. Clyde, president, Carnegie Steel Co. It will be ready for service in six weeks. The steamers are designed to carry a cargo of 12,000 gross tons on a 20-foot draft.

New York, June 25.—An easier tone is reflected in the manganese ore market here. Indian manganese ore of high quality has been offered as low as 31 cents per unit, c.i.f. tidewater. Chilean manganese ore has been offered at 33 cents.

W. R. Warner Dies

Worcester R. Warner, 83, one of the founders of the Warner & Swasey Co., Cleveland, machine tool builder and manufacturer of giant telescopes, died June 25 in Eisenach, Frankfurt, Germany. Mr. Warner left Cleveland in May for a tour of Europe with his family. He had been in apparent perfect health and was ill for but a few hours before he died. Mr. Warner was born in Cummington, Mass., May 16, 1846.

Sheets

Demand Is Well Sustained—Backlogs Increased—Operations Continue at High Rate

NEW sheet business is holding up well to the active rate that has been in effect since the first of the year. Unusually large demands from other lines have compensated for the letdown in the automotive industry. Backlogs have been extended further. Prices are steady. Operations in the Pittsburgh and Chicago districts are close to 90 per cent.

SHEET PRICES, PAGE 1733

Pittsburgh, June 25.—Sheet demand continues surprisingly active for June. Incoming business still exceeds shipments, although operations are slower due to warm weather. Little further decline is noted in demand for automobile sheets and in some instances requests have been received for larger tonnages. Other consuming lines are taking a normal or abnormal volume of material. Mills are assured of steady operations into August. Backlogs on blue annealed sheets are further extended, with shipments deferred as far as eight weeks. Contracting for third quarter is fairly active, with no particular changes in the price situation. Galvanized sheets are unsteady, and shading of black sheets continues in certain localities. The sold-up condition of mills on blue annealed sheets is lending strength to this grade. Mills generally are quoting 2.95c, Pittsburgh, for black sheets, 3.00c for tin mill black, 3.70c for galvanized, 2.35c for blue annealed, and 4.10c for automobile material.

Philadelphia, June 25.—Sheets can now be obtained from mills in two to three weeks. Black sheets generally are 2.85c, base, Pittsburgh; galvanized 3.60c, blue annealed plates 2.10c to 2.20c, and blue annealed sheets 2.35c. Hot strip wider than 24 inches usually brings 2.10c on heavy gages and 2.25c on light gages.

Buffalo, June 25.—Automobile manufacturers now are limiting sheet purchases to needs for about 30 days. Prices are firm, 4.365c, Buffalo, being asked for full finished sheets, and 3.215c for black. Steelworks producing sheets continue to operate at approximately 90 per cent.

Youngstown, O., June 25.—The steel sheet industry in this district continues to operate at about 95 per cent. Makers of high-grade autobody sheets are booked ahead many weeks, while makers of the other grades of sheets have order books filled four to six weeks ahead. Quotations generally appear unchanged at 2.95c, Pittsburgh, for common black; 4.10c for autobody; 3.70c for galvanized, and 2.30c for No. 13 gage blue annealed. Rumors are heard of large Michigan consumers getting common black at 2.85c.

Cleveland, June 25.—Orders for autobody sheets and other grades used by automobile companies show the most shrinkage. Other manufacturers continue to buy as they did during April and May. Mills are catching up on deliveries. Prices generally are firm.

Detroit, June 25.—A tight delivery situation in sheets continues, especially in the higher finishes, despite a noticeable letdown in consumption. For some mills June shipments are 10 to 15 per cent under May, and July may see further easiness, though the volume still is probably the highest for the season. Autobody sheets seem firm at 4.10c, Pittsburgh. Some automotive users have closed on black sheets through part of the third quarter at 2.85c. Undercutting of the 3.70c quotation on galvanized is weakening this product here.

Chicago, June 25.—Sheet mill operations are at a higher rate and backlogs are growing. Specifications for black sheets are about even with shipments, while orders for galvanized, blue annealed and roofing sheets are about 50 per cent ahead of shipments. Black and galvanized shipments are about eight weeks, while blue annealed shipments are 10 to 12 weeks. Chicago delivered prices are 3.10c for No. 24 black, 3.85c for No. 24 galvanized, and 2.50c for No. 13 blue annealed sheets. Blue annealed plates are 2.35c, base, delivered. Mill quotations are $1 a ton under the delivered prices.

Steel Castings Decline

Washington, June 25.—Bookings of commercial steel castings in May declined sharply from April, but show an increase over May, 1928, of about 30 per cent. Department of commerce monthly comparisons follow:

	—Bookings—		—Production—	
	†Total net tons	Railway specialties	†Total net tons	Railway specialties
1928				
May	86,796	34,995	93,333	36,599
June	72,107	22,597	91,746	30,742
July	66,992	20,483	78,648	27,501
Aug.	81,286	25,171	87,742	27,157
Sept.	82,762	35,234	75,761	25,311
Oct.	78,860	26,736	87,952	29,471
Nov.	84,742	34,545	82,385	30,799
Dec.	96,378	43,928	82,203	26,484
Total	1,000,283	389,863	1,021,956	371,564
1929				
Jan.	124,313	64,809	93,413	35,689
Feb.	115,539	58,903	97,468	40,282
Mar.	130,271	60,677	114,632	43,348
April	142,522	74,425	118,986	52,483
May	113,219	44,919	127,079	58,636

†For tonnage of miscellaneous castings deduct Railway Specialties from the total.

Structural Shapes

Pending Work Aggregates Near Million Tons —8000-Ton Buffalo City Hall Included— Price Cuts Are Disappearing at Buffalo

NATIONAL surveys by a large fabricator indicate 1,000,000 tons of pending work, of which 900,000 represents jobs taking 1000 tons or more at a time. Fabricators have a bright outlook since much of this is for early closing, including an 8000-ton city hall at Buffalo, a 4200-ton building in San Francisco and numerous other scattered projects, involving the usual 350 to 3000 tons. New contracts awarded include a 3000-ton building in Los Angeles, a 2300-ton structure at Baltimore, a 2100-ton telephone building in New York and a 1200-ton aeronautical building in Long Island, N. Y. Price cutting at Buffalo is disappearing. Other sections are likewise firmer. Third quarter contracting is virtually complete at levels unchanged from the second quarter.

STRUCTURAL SHAPE PRICES, PAGE 1733

New York, June 25.—While structural tonnage placed this week shows a drop, pending building projects continue large. Eastern mills operate close to capacity. Western business is being placed in the East where mill schedules make this possible. Third quarter contracting continues at unchanged prices. Country wide projects involving 1000 tons or more each are estimated to total more than 900,000 tons by one large producer of shapes. This with smaller tonnages, makes an aggregate exceeding 1,000,000 tons, much due for early settlement.

Boston, June 25.—The aggregate of large tonnages for fabrication continues small. Odd jobs total fairly well. Recent price cutting was found less general last week.

Worcester, Mass., June 25.—Awards of 503 tons for the week with previous bookings insure steady operation of fabricating plants for the next two months. An inquiry for 600 tons is pending.

Philadelphia, June 25.—While structural lettings were light last week, considerable tonnage is pending. Shape demand has improved and eastern mills, operating at 80 to 90 per cent, are able to make fairly prompt shipment. Plain shape prices are 1.90c to 2.05c, base, nearest mill.

Pittsburgh, June 25.—Shape awards are less active. Few large jobs are noted but inquiry for small work has expanded slightly. Competition continues keen and prices are under pressure at times. Specifications for plain material are holding well and maintain the high operating rate. Backlogs are not extensive, however. Current prices continue on third quarter contracts.

Buffalo, June 25.—Large structural tonnage continues to be listed locally as pending. A new job announced this week involves 700 tons for a Buffalo waterfront bridge on which the Independent Bridge Co. is low. City officials will hasten award of the new city hall, with construction to start in August.

Cleveland, June 25.—A number of small jobs have been closed, including a 205-ton bridge for the Cleveland Union Terminals Co., and a 200-ton school at Euclid, O. The 700-ton school at Toledo, O., went to Massillon Bridge & Structural Co. which also took a small power house job in Shaker Heights, O. Some fabricators are able to operate 100 per cent but all on jobs less than 100 tons at a time.

Chicago, June 25.—Third quarter structural shape tonnage placed on the books thus far represents individual requirements similar to second quarter. Car shop specifications with fabricators' needs extend deliveries to a maximum of 10 weeks for certain sizes of plain shapes. Plate structural material is still farther off. About 3000 tons in building and bridge inquiry has appeared, and between 8000 and 9000 tons has been closed. The 2.05c, Chicago, price is the basis for much of the spot and contract tonnage closed.

Awards Compared

	Tons
Awards this week	27,378
Awards last week	70,950
Awards two weeks ago	38,386
Awards this week in 1928	32,596
Average weekly awards, 1928	39,082
Average weekly awards, 1929	42,827
Average weekly awards, May	42,174
Total awards to date, 1928	982,548
Total awards to date, 1929	1,113,503

CONTRACTS PLACED

5000 tons, power house, Northern Indiana Public Service Co., Michigan City, Ind., to McClintic-Marshall Co.; reported last week as going to unstated interest.

3500 tons, hotel, Central Park and West Sixth avenue, New York, to Harris Structural Steel Co.

3000 tons, Southern California Edison Co., building, Fifth and Grant street, Los Angeles, to Consolidated Steel Corp.

2300 tons, building, Proctor & Gamble Co., Baltimore, to American Bridge Co.

2100 tons, telephone building, Thirteenth street, New York, to Taylor-Fichter Steel Construction Co.

1600 tons, body plant at Memphis, Tenn., for the Murray Body Corp., to Virginia Bridge & Iron Co.

1300 tons, building, Southern California Telephone Co., to Consolidated Steel Corp.

1200 tons, building, American Aeronautical Corp., Port Washington, Long Island, N. Y., to Pittsburgh Bridge & Iron Co.

1000 tons, addition, Southwestern Bell Telephone Co., Omaha, Nebr., to Omaha Steel Co.

1000 tons, office building, New Rochelle, N. Y., to Easton Structural Steel Co.

980 tons, Metropolitan Life Insurance Co. building addition, Los Angeles, to Judson-Pacific Co.

700 tons, high school, Toledo, O., to Massillon Bridge & Structural Co., through A. Bentley & Sons, general contractors.

600 tons, Nurse's home, Evanston, Ill., to Midland Structural Steel Co.

575 tons, state highway viaduct, Tacoma, Wash., to Poole & McGonigle.

500 tons, telephone exchange building, Fordson, Mich., to R. C. Mahon Co.

500 tons, building, Bloomfield Bank & Trust Co., Bloomfield, N. J., to Hay Foundry & Iron Works.

450 tons, hangar, Springfield, Mass., to unstated interest.

400 tons, residence, H. F. du Pont, Wilmington, Del., to McClintic-Marshall Co.

400 tons, bridge work, St. Louis-San Francisco railroad, to American Bridge Co.

350 tons, roof for plant building, National Brick Co., East Chicago, Ind., to Wisconsin Bridge & Iron Co.

350 tons, garage, West Sixty-sixth street, New York, to Easton Structural Steel Co.

325 tons, Sunbury industrial building, Sunbury, Pa., to Shippers' Car Line Co.

300 tons, apartment, 146 West Twenty-fourth street, New York, to Dreier Iron Works.

260 tons, factory, Ternstedt Mfg. Co., Detroit, to McClintic-Marshall Co.

245 tons, Candler office building, Atlanta, Ga., to Virginia Bridge & Iron Co.

230 tons, bridge work, Chicago & Alton railroad, to American Bridge Co.

205 tons, bridge, Cleveland Union Terminals Co., Cleveland, to McClintic-Marshall Co.

200 tons, plant addition, Heald Machine Co., Worcester, Mass., to Eastern Bridge & Structural Co.

200 tons, Shore school, Euclid, O., to National Iron & Wire Co.

200 tons, theater, Jackson, Mich., to R. C. Mahon Co.

200 tons, sales and service station, Hartford, Conn., to unnamed fabricator.

150 tons, city substation, Philadelphia, to Shoemaker Bridge Co.

150 tons, hangar, South Dartmouth, Mass., to the Austin Co.

150 tons, theater, Detroit, to R. C. Mahon Co.

150 tons, power house, Van Sweringen Co., Shaker Square, Cleveland, to Massillon Bridge & Structural Co., through W. J. Schirmer Co., general contractor.

140 tons, two ferry bridges, San Diego, Calif., to Consolidated Steel Corp.

125 tons, store, Fifth street, Santa Ana, Calif., to Pacific Iron & Steel Co.

120 tons, bridge work, Illinois Central railroad, to unstated fabricator.

120 tons, building, First National bank, Flint, Mich., to Flint Structural Steel Co.

103 tons, trestle, Worcester Gas Light Co., Worcester, Mass., to Eastern Bridge & Structural Co.

100 tons, hospital, Waltham, Mass., to Eastern Bridge & Structural Co.

100 tons, penitentiary addition, Walla Walla, Wash., to Hofius Steel & Equipment Co.

100 tons, penstock, Lake Cushman dam, Washington, to Commercial Boiler Works.

100 tons, apartment, Pacific and Van Ness avenue, San Francisco, to McClintic-Marshall Co.

100 tons, Elks lodge, Alhambra, Calif., to unnamed fabricator.

100 tons, highway bridge, Baton Rouge, La., to Virginia Bridge & Iron Co.
100 tons, power house extension, Du Pont Engineering Co., Belle, W. Va., to Virginia Bridge & Iron Co.
100 tons, bank building, Cleveland Trust Co., Painesville, O., to National Iron & Wire Co.
100 tons, synagogue, Waterbury, Conn., to Eastern Bridge & Structural Co.
100 tons, store, Sears, Roebuck & Co., Flint, Mich., to Flint Structural Steel Co.

CONTRACTS PENDING

8000 tons, city hall, Buffalo; John W. Cowper Co., Buffalo, general contractor, low bidder.
4200 tons, building, Shell Oil Co., San Francisco. Bids received.
4000 tons, electrification construction, Delaware, Lackawanna & Western railroad; American Bridge Co. low bidder.
3600 tons, restaurant and office building, John R. Thompson Co., South Wabash avenue, Chicago.
3380 tons, warehouses, exchanges, etc., Michigan Bell Telephone Co., as follows: Saginaw, 2000 tons; Detroit, 400 tons; Grand Rapids, 430 tons; Benton Harbor 350 tons, and Grand Haven, 200 tons.
2000 tons, assembly plant addition, Chevrolet Motor Co., Tarrytown, N. Y.
2000 tons, reconstruction of Fine Arts building, Jackson park, Chicago. Bids in.
2000 tons, telephone building, East Thirteenth street, and Second avenue, New York. Revised estimate.
1700 tons, H. J. Heinz auditorium, Pittsburgh.
1500 tons, Curtis Creek bridge, Baltimore.
1100 tons, public schools Nos. 100 and 141, Queens, N. Y. Bids opened.
1100 tons, apartment, O'Farrel street, San Francisco. Bids received.
1000 tons, hotel, Harrisburg, Pa.
1000 tons, train shed for Union station, Omaha, Nebr.
1000 tons, building, Detroit Steel Products Co., Detroit.
935 tons, pier shed No. 48, San Francisco, Pacific Coast Engineering Co.
700 tons, Michigan avenue lift bridge, Buffalo; Independent Bridge Co., Pittsburgh, low bidder.
700 tons, Warner Bros. theater, West Fifty-first street, New York.
600 tons, Ford airplane plant addition, Detroit.
600 tons, exhibit building, fair grounds, Pomona, Calif.; McClintic-Marshall Co. low bidder.
500 tons, dam, Pasadena, Calif. Bonds voted.
435 tons, bridge across Trinity river, Sacramento, Calif. Bids withdrawn.
400 tons, bridgework at Springfield, Ill., for Chicago & Illinois Midland railroad.
400 tons, addition to Chicago, Burlington & Quincy railroad station, at Omaha, Nebr.
400 tons, Ohio Bank building, Toledo, O.
400 tons, Christian Science church, Cleveland. Bids in.
350 tons, plate girder spans, Union Pacific railroad.
250 tons, bakery, Snyder avenue, Brooklyn, N. Y.
250 tons, bank building, Pittsfield, Mass.
200 tons, bridge for Boston & Maine railroad, Lawrence, Mass.
100 tons, building, Cleveland Institute of Aviation, Cleveland.
100 tons, addition, City hospital, Cleveland.
100 tons, bridge, City of Cleveland, Berea road, Cleveland. Bids in.
Unstated tonnage, Public Service Co. of Northern Illinois, Waukegan, Ill.

Byers Plant To Expand

A $1,500,000 expansion project is reported announced by the A. M. Byers Co., Pittsburgh, for its Warren, O., plant. The plant will be converted to a sheet bar mill and the pipe department transferred to its Ambridge, Pa., works. Work is to start in a few days.

Racor Pacific Frog and Switch works of the Ramapo Ajax Corp., Los Angeles, is installing six new jib cranes.

Concrete Bars

Sewers Require Large Lots —Garage Takes 1350 Tons —Inquiry Rate Is Good

SEWER work in Brooklyn, Pittsburgh and Detroit looms up importantly in concrete bar awards. Individual lettings grow in size. Ten or more jobs were awarded involving 300 to 1350 tons apiece. Pending work, especially in Chicago, is heavy, including a 1000-ton power house. East Boston's vehicular tunnel and a bridge at Buffalo take large lots. Prices firm in most sections.

REINFORCING BAR PRICES, PAGE 1733

Chicago, June 25.—Several large tonnage reinforcing bar projects are active. Included are a 1000-ton power house, a 500-ton warehouse, a 400-ton hospital addition, and a similar tonnage for Cedar Rapids, Iowa, sewage disposal works, on which revised bids are asked. An 800-ton department store project was awarded. Shipments are steady. Rail steel bar prices show more pronounced weakness than quotations for billet reinforcing bars, although concessions under the 2.40c minimum for billet bars are occasionally reported.

Boston, June 25.—Odd tonnage awards last week in concrete bars totaled 250 tons. Passage of a bill by Boston for a vehicular tunnel to East Boston means a large tonnage of reinforcing steel will come up later. It is understood the work will be pushed for an early start. New Hampshire recently purchased a fairly large tonnage of mesh for state roads from the American Steel & Wire Co.

Pittsburgh, June 25.—Reinforcing concrete bar awards are more active. Two orders totaled 1200 tons. Demand for outlying districts continues active. Shipments from mills are well sustained. Distributors increased their stocks recently and producers extended shipments as far as four to five weeks. The market continues 2.30c, Pittsburgh, for cut lengths and 2.00c for stock lengths.

Buffalo, June 25.—Reinforcing bar demand continues good. A 400-ton lot was awarded for a local warehouse and a bridge inquiry is out for 400 tons. Prices are steady. Road contractors are forwarding shipping instructions for mesh tonnages to tax producers' facilities.

Cleveland, June 25.—A parcel post station is up for bids here, for 200 and 250 tons of concrete bars. The 150-ton lot for the warehouse for Norton Co. will be furnished by Republic Structural Iron Works.

Awards Compared

	Tons
Awards this week	9,174
*Awards last week	4,646
Awards two weeks ago	4,558
Awards this week in 1928	12,428
Average weekly awards, 1928	6,189
Average weekly awards, 1929	6,540
Average weekly awards, May	7,668
Total awards to date, 1928	190,578
Total awards to date, 1929	170,027

*Revised.

CONTRACTS PLACED

1350 tons, New York Central garage, New York, to Jones & Laughlin Steel Corp., through Turner Construction Co.
900 tons, addition, City-County building, Seattle, to Northwest Steel Rolling Mills.
800 tons, Goldblatt department store, Chicago, to Kalman Steel Co.
700 tons, Thirty-third street sewer, Pittsburgh, to Electric Welding Co.
600 tons, grain elevator, Washburn-Crosby Co., Minneapolis, to Sheffield Steel Corp.
600 tons, sewer construction, Brooklyn, N. Y., to Igoe Bros.
500 tons, building, Montgomery Ward & Co., Spokane, Wash., to Pacific Coast Steel Co.
500 tons, Fox Creek sewer, section 1, Detroit, to Jones & Laughlin Steel Corp., through Palmer Bee Co.
400 tons, Producers' warehouse, Buffalo, to Jones & Laughlin Steel Corp.
300 tons, building, Proctor & Gamble Co., Baltimore, to Concrete Steel Co.
275 tons, building, Frankford Grocery Co., Philadelphia, to Gilmour Rosslyn Steel Co.
250 tons, exchange building, Wisconsin Telephone Co., Milwaukee, to American System of Reinforcing.
200 tons, areonautics hall, University of Washington, Seattle, to Northwest Steel Rolling Mills.
200 tons, telephone exchange building, Milwaukee, to American System of Reinforcing.
200 tons, Westside elevated highway, New York, to Concrete Steel Co.
150 tons, Evanston Nurses' home, Evanston, Ill., to Concrete Steel Co.
150 tons, factory building for undisclosed owner, Belmont and Tripp avenues, Chicago, to Calumet Steel Co.
150 tons, warehouse, Norton Co., Hamilton avenue, Cleveland, to Republic Structural Iron Works.
150 tons, state highway projects, Washington, to Northwest Steel Rolling Mills.
150 tons, mausoleum, Hayward, Calif., to Truscon Steel Co.
149 tons, paving in Orange county, Sacramento, Calif., to unstated interest.
100 tons,, pier No. 48, San Francisco, to W. S. Wetenhall Co.
100 tons, Garfield school. Seattle, to Pacific Coast Steel Co.
100 tons, warehouse, Eighth avenue, Seattle, to Pacific Coast Steel Co.
100 tons, commissary, Chicago, Milwaukee, St. Paul & Pacific railroad, West Grand avenue, Chicago, to Jones & Laughlin Steel Corp., and American System of Reinforcing.
100 tons additional, International Telephone & Telegraph Co. building, New York, to Concrete Steel Co.

CONTRACTS PENDING

750 tons, dam at Pasadena, Calif. Bonds voted.
416 tons, bridge over Cottonwood Creek, Sacra-

mento, Calif. Bids received.
400 tons, Michigan avenue lift bridge, Buffalo, Independent Bridge Co., Pittsburgh, low bidder.
300 tons, Vance building, Seattle. Bids being received.
200 to 250 tons, parcel post station, the Bradley Co., Cleveland. Bids being closed.
168 tons, paving and 14 bridges, Phoenix, Ariz. Bids July 8.
156 tons, paving in San Diego county, Sacramento, Calif. Bids received.
128 tons, reconstruction of Fine Arts building, Jackson park, Chicago, general contract to R. C. Wieboldt Co.
115 tons, Berwyn State bank, Berwyn, Ill., general contract to E. Liska.

Pig Iron

(*Concluded from Page* 1735)

average, the second highest in history. Included in the sales reported is 18,000 tons of basic for an east side mill, and 5000 tons for a St. Louis steelmaker. Prices are firm.

Philadelphia, June 25.—Pig iron inquiries for third quarter are more numerous. The largest is for 3500 tons for a Trenton, N. J., radiator plant. Sales of low phosphorus iron to middle western consumers total 3000 to 5000 tons for the past week. Several inquiries are pending for low phosphorus iron.

Birmingham, Ala., June 25.—Sales of pig iron for third quarter delivery are being made at $15, base, Birmingham, a reduction of 50 cents from the price recently prevailing. Makers are hopeful of obtaining a lower freight rate to the East during July, enabling them to meet competition along the Atlantic coast. Production is steady, with considerable iron on furnace yards. Some furnace interests say $15 is the lowest price at which iron has been sold in years. The announcement caused no surprise as iron was offered by them at that level some weeks ago north of the Ohio river.

Toronto, Ont., June 25.—Pig iron buying is more general for third quarter. Good contracts were closed in the past week by local blast furnace representatives. Producers have large backlogs for the next three months. Spot sales for the week amounted to close to 2000 tons. Prices are firm.

May Foundry Output at Worcester High

Worcester, Mass., June 25.—Iron foundry production in the Worcester district, as reported by 11 foundries composing the Foundry council, shows an increase in May over last May of 42 per cent. Production for May was 5,231,926 pounds. Comparison by months for the past year follow:

1928	Pounds
May	3,683,065
June	3,439,880
July	3,465,559
August	3,181,115
September	3,110,968
October	3,709,744
November	3,981 883
December	4,175,119
	42,276,248
1929	
January	3,841,380
February	4,356,460
March	5,029,613
April	4,916,263
May	5,231,926

Rails, Cars

Purchase of 33,864 Tons Leads Rail Activity—More Cars Are Bought—1250-Car Inquiry Out

SOUTHERN Pacific's 3-way division of 33,864 tons leads in secondary rail activity. Argentine buys 268 cars. Lackawanna railroad asks tenders on 1250. New York Central awards 25 engines; asks bids on third quarter steel requirements. Wabash takes bids on 25 locomotives. Pennsylvania is reported to have bought 4000 cars. May saw 5338 cars to builders' books.

RAILROAD TRACK PRICES, PAGE 1734

New York, June 25.—Delaware, Lackawanna & Western's inquiry for 1250 cars is the largest now pending in the East. American Car & Foundry Co. was awarded contracts for 268 cars for the Argentine.

New York Central opens bids today on its third quarter requirements of plates, shapes, bars, sheets, billets, wire, wire nails, axles, etc.

Car awards in May aggregated 5338, against 8205 in April. This brings the total for five months this year to 54,666, against 44,763 for all 1928. A comparison follows:

	1929	1928	1927	1926
Jan.	13,196	4,160	14,710	8,830
Feb.	15,944	10,220	5,960	12,895
March	12,023	2,958	4,955	8,895
April	8,205	6,043	3,675	4,615
May	5,338	2,531	5,425	4,448
Total (5 mos.)	54,666	25,612	34,725	39,850
June		2,422	7,440	4,285
July		582	2,295	1,265
Aug.		677	1,181	152
Sept.		1,378	682	3,335
Oct.		2,853	886	2,840
Nov.		6,140	1,189	3,925
Dec.		4,799	14,897	8,990
Total		44,763	63,295	64,475

Pittsburgh, June 25.—Specifications for track material are tapering gradually. New business is quiet. Pennsylvania will take bids until July 1 on track fastening requirements, about 5000 tons. Light rails are quiet.

Chicago, June 25.—Secondary rail needs of several western roads, will soon take definite form. One western road bought 3500 tons for July shipment. About 33,864 tons were purchased by Southern Pacific, about 9000 tons going to Colorado Fuel & Iron Co. and the rest divided between Tennessee Coal, Iron & Railroad and Bethlehem Steel companies.

Track fastenings sales in the week just closed totaled about 3000 tons. Several roads placed third quarter contracts for track accessories with western mills. Rail mill operations may continue without much decline throughout July. Roads urge delivery of all material. Car builders' operations are kept at about 85 per cent. Their steel specifications are steady.

Cleveland, June 25.—Wheeling & Lake Erie has purchased 1500 tons additional rails from a Pittsburgh mill.

CAR ORDERS PLACED

American Sheet & Tin Plate Co., one 30-yard trunnion air dump car, to Koppel Industrial Car & Equipment Co.

Argentine Republic, 268 cars, including: 106 30-ton steel gondolas, 94 steel box cars, two 30-ton steel flat cars and 66 tank cars, to American Car & Foundry Co. Berwick and Milton plants. Tank cars to be built at Milton.

Carnegie Steel Co., 22 gondola bodies, to Greenville Steel Car Co.

Central Alloy Steel Corp., one 30-yard trunnion type air dump car, to Koppel Industrial Car & Equipment Co.

A. Guthrie & Co., six 30-yard rolling trunnion type air dump cars, to Koppel Industrial Car & Equipment Co.

Chicago & North Western, five steel horse cars, to American Car & Foundry Co.

Northern Pacific, 100 flat cars to Pressed Steel Car Co., in addition to 200 placed recently.

Seaboard Airline, converting 300 plain gondolas into hopper bottom cars, to Richmond Car Works.

Youngstown Sheet & Tube Co., two 30-yard trunnion air dump cars, to Koppel Industrial Car & Equipment Co.

LOCOMOTIVE ORDERS PLACED

New York Central, 25 heavy duty switch engines for Pittsburgh & Lake Erie, to Lima Locomotive Works.

CAR ORDERS PENDING

Brooklyn-Manhattan Transit, 120 triplex type cars or 80 standard steel motor cars ordered purchased by Transit commission.

Cities Service Tank Line, New York, four 4000-gallon 2-compartment tank cars.

Delaware, Lackawanna & Western, 1000 55-ton box cars and 250 70-ton steel hopper bottom coal cars. On the box cars alternate bids asked for steel underframes or all-steel construction. Also two steel combination mail and baggage cars.

National Lead Co., New York, one 10,000-gallon tank car.

New York, New Haven & Hartford, one to 50 20-ton hopper cars.

Pennsylvania is reported to have placed 4000 steel box car bodies, 1000 to Pressed Steel Car Co., 900 to American Car & Foundry Co., 800 to Ralston Steel Car Co., 700 to Pullman Car & Mfg. Corp., and 600 to Standard Steel Car Co.

LOCOMOTIVE ORDERS PENDING

Wabash, 25 locomotives of 2-8-2 type.

Furnishes Book Reviews

Reviews of technical books acquired by the Engineering Societies library will be furnished to subscribers of the Engineering Index Service, 29 West Thirty-ninth street, New York. This added service will bring attention to the existence of valuable literature to the extent of several hundred volumes annually.

Wisconsin produces more fuel briquets than any other state.

Strip

Slight Lessening of Demand but Mills Are Slow on Delivery—Current Prices Are Firm

SUMMER has had little effect on requirements of consumers of cold finished steel, and mills, with backlogs somewhat reduced, continue far behind in meeting delivery requests. Third quarter buying is under way and indicates continued need for tonnage. Automotive needs hold the key to future requirements and remain at a higher level than had been expected.

STRIP PRICES, PAGE 1734

Pittsburgh, June 25.—Decline in specifications for strip steel is moderate and producers are assured heavy operations through July. Backlogs have been reduced materially in the past 60 days, but incoming business is not far below shipments. Wider widths of hot strip continue more active than narrow and delivery is furthest extended on this material. Contracting for third quarter is fairly active with current prices of 1.90c and 2.00c, Pittsburgh, for the two sizes of hot strip, and 2.75c to 2.85c for cold-rolled strip well maintained.

Cleveland, June 25.—Reduced schedules of some automobile producers are reflected in improved shipping dates of strip manufacturers. Some mills are still filled until late July on wide and one is offering late July delivery dates on narrow hot, but backlogs are shrinking and incoming business has receded considerably. Price concessions are reported on cold in the Detroit area but hot strip prices are firm both there and here.

Chicago, June 25.—Cold rolled strip backlogs are about six weeks. A slight falling off in tonnage is reported because of lighter automotive schedules, but it is indicated the decline from automotive builders will not be pronounced until July. Most buyers have closed for third quarter requirements. The price continues on the basis of 2.75c to 2.85c, Pittsburgh-Cleveland.

Aluminum Trade Forms Research Body

Chicago, June 25.—A number of leading smelters and consumers of scrap aluminum at a meeting here June 19 organized the Aluminum Research institute, to provide for joint constructive activities along a number of lines. Headquarters of the institute are at 308 West Washington street, Chicago.

Companies with charter membership are Alloys & Products Inc., New York; Apex Smelting Co., Chicago; Aurora Refining Co., Aurora, Ill.; Cleveland Electric Metals Co., Cleveland; Federated Metals Corp., New York; William F. Jobbins Inc., Aurora, Ill.; Lewin Metals Corp., East St. Louis, Ill.; National Smelting Co., Cleveland; Niagara Falls Smelting & Refining Corp., Buffalo, and the United States Reduction Co., East Chicago, Ind. Combined annual sales of these companies is estimated at 70,000,000 pounds.

One of the early activities planned is setting up of cost accounting system. The institute also will gather statistics on production and market conditions. Efforts also are to be made to standardize and simplify grades and specifications for aluminum alloys. Another aim of the institute is to promote a high standard of business ethics. Later researches will be made into the technical problems of the industry, and regarding utility of aluminum alloys.

Officers are: President, Walter M. Weil, National Smelting Co.; vice president, William A. McKnight, of William F. Jobbins Inc., and treasurer, Leo Wenk, United States Reduction Co. These officers, with William A. Singer, of the Apex Smelting Co., comprise the executive committee. R. D. T. Hollowell was elected secretary-manager. Mr. Hollowell also occupies a similar position with the Nonferrous Ingot Metal institute. Attorney James B. Wescott, Chicago, has been retained as general counsel.

Cold Finished Steel

Little Indication of Decline in Summer Demand

COLD FINISHED PRICES, PAGE 1734

Pittsburgh, June 25.—Specifications for cold-finished steel from automotive interests arranging July schedules are heavy and indicate that the letup in operations in that industry next month will be normal. Specifications this month compare favorably with May, although shipments are less active. Producers have fair backlogs, although the current tendency is to order mainly for immediate requirements. Third quarter contracts have been written at the unchanged price of 2.30c, Pittsburgh, and little opposition has been encountered.

Wire

Sales Holding Well for Midsummer—Prices Undergo no Change—Nail Demand Lags

SUMMER has failed to lessen demand for wire and its products, and nails seem the only weak spot. Slight decline has been registered in production. Prices for third quarter show no weakness and specifications as a whole are keeping at a high point. Western mills are booking moderately heavy tonnages. Fencing is slow because of wet weather.

WIRE PRICES, PAGE 1734

Chicago, June 25.—Moderately heavy tonnage is being booked by western wire mills. Wire mill operations have declined a few points and now are about 70 per cent. It is indicated sales of woven fencing, barbed wire and wire nails were slightly below what is regarded as normal spring sales, as a result of wet weather. Progress is being made in third quarter contracting and some specifications are reported. Jobber quotations on wire nails are $2.70, Chicago or western mills.

Worcester, Mass., June 25.—Demand for wire of all kinds continues to outstrip production schedules although mills are running at 80 per cent. Bookings for third quarter shipment are strong. Prices are steady at 2.75c, Worcester base, for plain bright wire.

Pittsburgh, June 25.—Manufacturers' wire demand is holding unusually well for June. Sales for some producers are running ahead of May and despite smaller automotive specifications the total tonnage remains large. Nail buying drags. Fencing material is fairly active but spotty. Practically all third quarter contracts have been made at current prices of 2.50c to 2.60c, Pittsburgh, for plain wire and $2.65 to $2.75 for wire nails. The market is firm.

Cleveland, June 25.—Plain manufacturers' wire, especially in heavier grades ¼ to ¾-inch, is being ordered in large tonnages. Nail orders, while not large, are fairly numerous. Occasional price competition is encountered on nails but the wire price is firm.

Detroit, June 25.—Demand for manufacturers' wire, which is quoted 2.50c, Cleveland, or 2.735c, delivered Detroit, has never been better for late June. Wire nails are in light demand and soft in price, delivered prices ranging from $2.785 to $2.885 per 100-pound keg.

Nonferrous Metals

Tin Sales More Active as Prices Rise and Later Ease Off—Zinc Firm on Strength of Recent Buying—Copper Holds Steady

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin—New York Spot	Straits Tin—New York Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
June 19	18.00	18.07½	17.37½	44.62½	45.37½	7.00	6.80	6.70	23.90	8.90	35.00
June 20	18.00	18.07½	17.37½	44.75	45.50	7.00	6.80	6.70	23.90	8.87½	35.00
June 21	18.00	18.07½	17.37½	44.75	45.50	7.00	6.80	6.70	23.90	8.87½	35.00
June 24	18.00	18.07½	17.37½	44.62½	45.35	7.00	6.80	6.70	23.90	8.90	35.00
June 25	18.00	18.07½	17.37½	44.37½	45.25	7.00	6.80	6.70	23.90	8.87½	35.00

NEW YORK, June 25.—Tin was more active in the past week than in a long time. Prices were stronger at first but later declined. Zinc was fairly firm on account of previous buying rather than new business. Other metals showed little change.

Operations in the nonferrous metal industries are letting down seasonally, but hold well above the corresponding levels of other years.

New business in most brass and copper products is routine and for quick shipment. Some mills report slight improvement. Old orders for current shipment are large but no longer extend far ahead except in a few grades of tubing and fine copper wire. Prices of products are unchanged.

Copper—Domestic buying has been extremely light. Export business has been remarkably steady, around 1000 tons each day for June shipment, mostly. Total shipments abroad this month probably will be the lightest in many months.

Zinc—Prime western prices have advanced to a minimum of 6.70c, East St. Louis, while several smelters continue to hold for 6.80c, at which figure they occasionally report some sales. New business has been light, but shipments are of good size.

Tin—Users and dealers have bought large quantities lately, mostly for arrivals two to four months ahead. In this action they were encouraged by the news from London indicating that tin producers are to organize. The statistical position of tin is not expected to change much this month.

Lead—Buying has been active for prompt and August shipment. Stocks are larger than usual.

Aluminum—New business is quiet but shipments large and prices firm.—*Daily Metal Trade.*

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	23.25
Copper, hot rolled	27.75
Lead, full sheets (cut ¼c more)	10.00
Zinc sheet (100-pound base)	$10.25
Zinc strip (100-pound base)	$9.25
Aluminum, flat sheets, up to 10 gage, 3 to 72 inches wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	28.25
Copper	29.25
RODS	
Yellow brass (high, full turnings)	21.25
Naval brass	24.00
WIRE	
Copper	19.87½
Yellow brass (high)	23.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	12.00 to 12.50
Chicago	11.50
Cleveland	12.25 to 12.50
HEAVY YELLOW BRASS	
Cleveland	8.75 to 9.00
ZINC	
New York	3.25 to 3.50
Cleveland	3.25 to 3.50
HEAVY COPPER AND WIRE	
New York	14.25 to 14.50
Boston	13.50 to 14.00
Chicago	12.50
Cleveland	13.50 to 14.00
RED BRASS BORINGS	
New York	11.00 to 11.50
YELLOW BRASS TUBING	
Cleveland	8.50 to 9.00
LIGHT COPPER	
New York	12.25 to 12.50
Chicago	11.50
Cleveland	12.50 to 13.00
LIGHT BRASS	
Boston	6.75 to 7.25
Chicago	7.50
Cleveland	6.75 to 7.00
ALUMINUM	
Clippings, Cleveland	18.00 to 18.25
Borings, Cleveland	9.50 to 10.00
Cast, Cleveland	12.50 to 12.75
Cast, Boston	10.00 to 10.50

Secondary Metals

Remelt aluminum No. 12	17.00 to 17.50
Brass ingot, 85-5-5-5	16.25 to 16.50

Coke By-Products

Phenol Supplies Low—Sulphate of Ammonia Demand Disappoints

New York, June 25.—Light oil distillates remain firm, with a satisfactory volume of business going forward. Benzol shipments against contracts are active, while a fair total of spot business also is being taken. There are evidences of a lull in toluol with the recession in automobile activity, but the general situation remains unchanged. Producers of xylol are well sold ahead. Some drop in activity in solvents is expected about July 1.

Supplies of phenol are low and prices are unchanged. There has been no large supply of phenol for some weeks and the easing of this situation, expected by some, has not developed. Bakelite manufacturers are taking a good part of the available supply.

Consumption of naphthalene continues to hold close to production at unchanged prices. Sulphate of ammonia is inclined to drag with the fertilizer interests yet to contract for supplies to any extent. One or two distress lots of naphthalene are reported to have moved slightly under the market, but prices are generally held firm.

Coke Oven By-Products

Per Gallon at Producers' Plant in Tank Lots

Pure Benzol	$0.23
90 per cent benzol	0.23
Toluol	0.40
Solvent naphtha	0.30
Commercial xylol	0.30
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	0.05½ to 0.06½
Naphthalene balls	0.06½ to 0.07½
Per 100 Pounds	
Sulphate of ammonia	2.20 to 2.25

Takes New Post July 1

Resigning as executive secretary of the federal power commission, O. C. Merrill on July 1 is to become head of the American section of the World Power conference. This latter organization represents various governments, technical societies and industries in an international study of the development and use of power in more than 40 countries. It acts as a reference and research bureau, and its services are of increasing importance in a power age.

Chicago To Expand

Chicago, June 25.—One sequel to the deferred delivery situation in finished steel, resulting in some business going to eastern mills, may be additional open-hearth and finishing capacity. Consideration is being given, it is understood, to expansion plans for this district.

The Hamilton, O., plant of the Ford Motor Co. has made 1,000,000 all-steel one-piece wheels in 42 days.

Warehouse

Except in Few Cases June Sales By Jobbers Equal to May—Chicago Reports Large Orders—Quotations Held

ALTHOUGH in most sections June warehouse selling is on a par with May, in a few a decline of 5 to 10 per cent is noted. Chicago jobbers report the presence of numerous large orders for 100 to 200 tons at a time. Outside work is a prolific source of specifications, except at Cincinnati, where such buying has slowed up. Demand is as diversified a sever. Quotations are firm.

New York—Warehouse steel volume continues seasonally high at unchanged prices for third quarter. Structural shapes and bars are in brisk demand. A slight drop is noted in demand for galvanized sheets.

Philadelphia—Jobbers note a falling off in tonnage, although bookings generally are fair. Prices throughout eastern Pennsylvaia, southern New Jersey, Delaware and Maryland continue stable on the basis recently described. This stability emphasizes by contrast the demoralized market in the Washington and Virginia territories.

Pittsburgh — Warehouse sales, slightly less active than a month ago, leave total business seasonally heavy. Jobbers still profit slightly from the mills' inability to effect prompt shipment. Building materials move well.

Buffalo—Warehouse demand continues good. June sales, while slightly behind those of the record April and May, are satisfactory. Daily mails indicate mills are unable to adjust their schedules to small orders, and warehouses benefit accordingly.

Cleveland—Active demand for steel from warehouse stocks continues in this territory. Some rush business is coming in from the manufacturing trade indicating that deferred mill deliveries are causing some inconvenience. Building steel demand is only fair. Prices are firm.

Detroit—Warehouse demand centers chiefly in bands, bars, hoops, shapes and special sheets. Shipments thus far in June are on a parity with the daily rate of May. On the whole, however, warehouse business is slightly disappointing when deferred mill deliveries are considered. Prices are unchanged.

Chicago—Finished steel buyers call for unusually heavy orders from warehouses. Single orders involve as much as four or five carloads. One implement maker requisitioned 200 tons. Sheet consumers are more active. Plate activity is above normal. June warehouse business this year will probably be 5 to 10 per cent ahead of June, 1928, but under May, 1929.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York ††‡‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York††	2.80c to 3.24c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.95c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl.	2.65c
Los Angeles, lcl.	3.00c
New York	2.90c to 3.30c
Philadelphia	2.75c to 3.10c
Pittsburgh	2.90c to 3.175c
San Francisco cl.	2.00c
San Francisco lcl.	2.25c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.00c
Houston	3.25c
Los Angeles	3.30c
New York †††‡‡	3.25c to 3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.60c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Ft. Worth	3.50c
Houston	3.90c
Los Angeles	4.00c
New York‡‡	3.70c to 3.90c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.35c to 3.45c
San Francisco	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.75c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore*†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c to 3.90c
Detroit	3.95c
Ft. Worth	4.70c
Los Angeles	4.90c
New York	4.00c
Philadelphia*†	4.10c
Pittsburgh**	3.85c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.89c
Tulsa	4.84c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago	4.90c
Cincinnati	4.90c
Cleveland***	4.60c to 4.75c
Detroit	4.75c
Ft. Worth	5.50c
Houston	5.30c
Los Angeles	5.30c
New York	4.75c
Philadelphia*†	4.85c
Pittsburgh**	4.85c to 4.95c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	5.10c
St. Paul	4.68c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	4.00c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit, 3/16-in. and lighter	3.30c
Ft. Worth	4.25c
Houston	3.65c
Los Angeles	4.15c
New York‡‡	3.75c
Philadelphia*	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York‡‡	4.25c
Philadelphia*	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons, squares	Flats, squares
Baltimore (c)	3.50c	(a) 4.00c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.60c	4.10c
Philadelphia*	3.60c	4.10c
Pittsburgh	3.70c	4.20c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.64c	5.14c

(a) Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.15c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL
New York duty paid

Hollow drill steel	13.00c
Iron bars, round	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **Less than 25 sheets. *† 50 or more bundles. ***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Pacific Coast

Good Volume of Orders Is Being Placed with Much in Prospect for Near Future

CONSTANT closing of contracts for construction work all along the coast gives sellers a steady backlog. Sufficient projects are being brought to the closing point to assure an active session to the close. A Los Angeles office building has taken 3000 tons and one in San Francisco, with 5000 tons, is being bid. Oil tanks have been closed for 2500 tons.

San Francisco, June 22.—(*By Air Mail*)—General conditions on the Pacific coast are considered excellent and demand has improved during the past ten days. Among the more important developments of the week was the placing of 3000 tons of structural shapes for an office building in Los Angeles, the call for bids for 5000 tons for an office building in San Francisco and the award of 2500 tons of plates for oil storage tanks in Los Angeles.

Foreign importations of iron and steel products on the Pacific coast during March, figures for which have just been received, were, for the major items, as follows:

	Tons Mar. 1929	Tons Feb. 1929	Tons Mar. 1928
Coke	2,624	3,980	7,121
Cast iron pipe	2,518	3,687	2,522
Tubular products	3,280	2,375	2,940

Pig iron imports were considerably below the total for March, 1928, as was the case both for bars and structural shapes.

Pig Iron and Coke

Demand for both foundry pig iron and coke continues to be limited to small lots and no large inquiries have come up for figures recently. No change in prices has occurred.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Awards of concrete bars this week totaled 1370 tons. Truscon Steel Co. secured 150 tons for a mausoleum in Hayward, Calif. Pasadena, Calif., voted bonds for a dam project which will require 750 tons. New inquiries include 168 tons for highway work at Phoenix, Ariz. Merchant bar steel holds firmly to 2.35c, c.i.f., established some time ago. On reinforcing steel bars in the San Francisco section, 2.30c, base, applies on carload lots and 2.60c on smaller lots. Los Angeles prices on out-of-stock material are $2 a ton higher.

Texas Oil Co., Los Angeles, placed 2500 tons for six 118,000-barrel tanks with the Lacy Mfg. Co., and expects to place another eight, calling for 3200 tons, within the next day or two. East Bay municipal utility district will open bids July 10 on 100 tons for a 54-inch riveted pipe line. Prices are exceptionally firm at 2.35c, c.i.f. coast ports.

The largest structural letting went to the Consolidated Steel Corp. and involved 3000 tons for the Southern California Edison Co. building, Los Angeles. The Judson-Pacific Co. took 980 tons for an addition to the Metropolitan Life Insurance building in San Francisco. McClintic-Marshall Co. secured 100 tons for an apartment in San Francisco and was low bidder on 600 tons for a fair building at Pomona, Calif. New inquiries include 4200 tons for the Shell Oil building, San Francisco, and 1100 tons for an apartment in San Francisco. Plain material continues firm at 2.35c, c.i.f.

Other Finished Material

Awards of cast iron pipe this week aggregated 4245 tons. Los Angeles placed 4201 tons with the American, the McWane and the National Cast Iron Pipe companies. This city is also in the market for 1148 tons of 24-inch pipe and 1426 tons of 8-inch pipe. Bids open July 10 on 2331 tons of 6 to 20-inch pipe for the East Bay municipal utility district. Los Angeles will open bids June 27 for 227 tons of ¾ to 2-inch galvanized standard pipe. No action has yet been taken by the Pacific Gas & Electric Co., San Francisco, on its inquiry for 2263 tons of gas pipe for installation at Gilroy, Monterey and Salinas.

Seattle Building Active

Seattle, June 19.—Contracts for more than 3100 tons of reinforcing steel, shapes and plates were awarded in the Pacific Northwest this week. Business immediately pending exceeds 4000 tons, while several large projects are to be up for figures within 90 days.

Bars, Plates and Shapes

Mill prices are unchanged and firm at 2.35c for these items, reinforcing steel strong at 2.30c. Price lists are being well maintained and imported materials, small in volume, are causing little disturbance.

Reinforcing awards this week totaled 1750 tons. The largest, 900 tons for the County-City building, Seattle, went to the Northwest Steel Rolling Mills, which also booked 200 tons for the University of Washington aeronautics hall, and 150 tons for state highway jobs. Pacific Coast Steel Co. will furnish 500 tons involved in the 7-story building for Montgomery Ward & Co., at Spokane. Contracts pending include 2500 tons for the Lake Cushman tunnel, 300 tons for state highway work, 550 tons for the Vance office building, and 125 tons each for Sand Point barracks and American Lake hospital. Montana will open bids June 28 for 15 highway projects including one 13-span concrete bridge. Local steel mills are well booked with business, much of it in small tonnages.

Commercial Boiler Works, Seattle, has been awarded two jobs involving 610 tons of plates. One calls for 500 tons in Seattle's Diablo dam penstock and the other is for the Lake Cushman power project. Vancouver, B. C., opened bids yesterday for a large riveted pipe job while plans are being prepared for water system extensions at Seattle and Everett which will require large tonnages of plates.

The largest structural job of the week, 575 tons for a state highway viaduct at Tacoma, was awarded to Poole & McGonigle, Portland. Hofius Steel & Equipment Co. took 80 to 100 tons for an addition to the state penitentiary at Walla Walla and Commercial Boiler Works will furnish 100 tons of shapes for the penstock at the Cushman dam. Business pending includes 160 tons for the County-City building, 150 tons for the Lake Cushman project and 110 tons for the Boeing field hangar. Bids to be opened June 27 by the Oregon highway commission include projects involving 42 tons of reinforcing and 100 tons of structurals. Northern Pacific railroad is planning a new bascule bridge across the Duwamish river, Seattle, to cost $120,000.

Seattle is soon to call for bids for 600 to 700 tons of sheet steel piling for a waterfront improvement at Alki beach.

New Rates More Aid to Independents?

Pittsburgh, June 25.—Pittsburgh district steel producers expect to benefit materially by the revised freight rates but there has been insufficient time to derive a final opinion on the net result. It is claimed a better relationship will result from Pittsburgh with eastern Pennsylvania and western producing points. It is believed independent producers will benefit more than the Steel corporation owing to the wide distribution of the latter's plants. Although reductions outnumber increases, lower rates to eastern points will be offset in shipments to other districts. Considerable advantage will be gained on shipments to Baltimore, for example, whereas the reduction to New York is only 1 cent and the rate to New England is higher. The former spread of 3 cents between New York and Baltimore from Pittsburgh is now 6 cents in favor of Baltimore.

I. C. C. Mileage Scale Cuts Most Iron, Steel Freight Rates

RAILROAD freight rates on practically all finished iron and steel articles will go on a mileage basis Oct. 20 in official classification territory—east of the Mississippi and north of the Ohio and Potomac rivers. This is decreed by the interstate commerce commission in a decision in Docket No. 17,000, following a general inevstigation of iron and steel rates. More than 90 per cent of the iron and steel production of the United States and 75 per cent of the consumption are in this territory.

On shipments within all points in official classification territory except New England, and from these points into New England, one mileage scale in progressive blocks is prescribed. On shipments within New England another scale, practically 10 per cent higher than the first scale, is ordered. In general, moderate reductions in rates will result. On some short hauls, notably those from Pittsburgh to nearby points, some sharp advances are in store. In a dissenting opinion Commissioner Woodlock estimates the annual revenue loss to the carriers will be less than $2,500,000.

Typical of the new basis, the rate from Pittsburgh to New York will be reduced from 34 cents per 100 pounds to 33 cents. The 34-cent rate from Pittsburgh to Chicago is unchanged. The rate from Buffalo to New York will be reduced from 32 cents to 31, and from Bethlehem to Philadelphia from 13 cents to 11.5. The relationship of important producing districts to Detroit is little changed. To Detroit the rate from Cleveland is reduced from 23.5 to 20 cents, from Chicago from 27.5 to 25 cents, from Youngstown from 26.5 to 23.5 cents, and from Pittsburgh from 29 to 26.5.

The decision concludes a widespread investigation of rates initiated shortly after the Jones & Laughlin scale was handed down April 15, 1925.

Pursuant to the Hoch-Smith resolution of congress the commission March 12, 1925, instituted a general investigation. With this probe were consolidated many individual proceedings. Some intrastate actions were heard concurrently, notably one affecting Ohio, but the present decision carries no specific finding with regard to any intrastate rates. The revised export rates, effective Dec. 31, 1927, and extended to Dec. 31, 1929, likewise are not affected.

On order of the commission the mileage rates given in the accompanying tables are effective Oct. 20, carload minimum weight to be 40,000 pounds. Distance rates are to be computed on the basis of the shortest routes over which carload traffic can be moved without transfer of lading. The mileage rates prescribed are to be applied to and from Michigan points without the addition of zone arbitraries.

On New England traffic moving via the Harlem river gateway through New York harbor in connection with the New Haven railroad, an arbitrary not to exceed 2 cents per 100 pounds is allowed. The addition of an arbitrary for movement of traffic across the Louisville, Ky., bridge is found not justified. The use of differentials both at interior points and at the ports is disapproved. In regard to grouping the decision says:

Reasonable origin grouping will be permitted. * * * Group rates should be computed so as to produce substantially the same average rates that would result from the application of the scale from each point in the group. * * * In establishing rates to or from points which are not grouped representative basing points may be selected which should include most of the common or junction points and in addition a sufficient number of local and termini points so that the distance between basing

Reductions Lead in Comparing Old and New Rates

PITTSBURGH TO	Distance in miles	Present rate Cts. per 100 lb.	Proposed mileage rate
New York	426	34	33
Philadelphia	350	34	29
Baltimore	305	31	27
Harrisburg, Pa.	248	31	24
Albany, N. Y.	473	34	34
Elmira, N. Y.	274	28.5	25.5
Norfolk, Va.	513	38	36
Buffalo	231	26.5	23.5
Erie, Pa.	145	22	19
Johnstown, Pa.	78	11	14
Wheeling, W. Va.	61	11	12.5
Butler, Pa.	37	7.5	10
Ambridge, Pa.	16	3.5	8
Toledo, O.	244	26	24
Cincinnati	311	27	27
Detroit	297	29	26.5
Lima, O.	270	25.5	25
Boston	659	36.5	40
New Hav., Conn.	520	36.5	36
Chicago	468	34	34
York, Pa.	275	31	25.5
Reading, Pa.	302	32	27
Cleveland	132	19	18.5
BUFFALO TO			
New York	390	32	31
Philadelphia	396	32	31
Baltimore	394	32	31
Albany, N. Y.	291	21.5	26.5
Norfolk, Va.	619	38	39
Pittsfield, Mass.	338	33	28
Black Rock, N. Y.	4.5	3	6
Rochester, N. Y.	69	11.5	13
Johnstown, Pa.	250	24	24.5
DuBois, Pa.	154	19	19.5
Oil City, Pa.	136	15.5	18.5
Erie, Pa.	86	13.5	15

	Distance in miles	Present rate Cts. per 100 lb.	Proposed mileage rate
JOHNSTOWN, PA. TO			
Butler, Pa.	88	11	15
Cumberland, Md.	89	13	15
Wheeling, W. Va.	134	17.5	18.5
Warren, Pa.	176	20	20.5
Jamestown, N. Y.	202	28.5	22
Parkersburg, W. Va.	228	21	23
CHICAGO TO			
Toledo, O.	233	26.5	23.5
Dayton, O.	267	27.5	25
Lima, O.	208	25.5	22
Cincinnati	285	28	26
Detroit	268	27.5	25
Indianapolis	184	19.5	21
South Bend, Ind.	86	14	15
Fort Wayne, Ind.	148	17.5	19
Evansville, Ind.	286	24.5	26
Kokomo, Ind.	132	17	18.5
New York	896	56.5	47
Philadelphia	770	54.5	44
Baltimore	774	53.5	44
St. Louis	279	22	25.5
Milwaukee	85	9.5	14.5
EAST ST. LOUIS, ILL. TO			
South Bend, Ind.	325	30.5	28
Muncie, Ind.	292	28.5	26.5
Indianapolis	238	27	23.5
Evansville, Ind.	163	23.5	20
BETHLEHEM, PA., TO			
Allentown, Pa.	5	3	6
Lancaster, Pa.	40	13	10.5

	Distance in miles	Present rate Cts. per 100 lb.	Proposed mileage rate
Philadelphia	53	13	11.5
Coatesville, Pa.	80	17.5	14
York, Pa.	100	19	16
Baltimore	155	19	19.5
Norfolk, Va.	315	28.5	27
Syracuse, N. Y.	234	22.5	23.5
New Hav., Conn.	175	25.5	20.5
Boston	314	25.5	27
Rochester, N.Y.	293	22.5	26.5
Newton Falls, O.	426	36	33
Cincinnati	652	47	40
STEELTON, PA., TO			
Mansfield, O.	423	40	32
Canton, O.	349	37	29
Jamestown, Pa.	303	35	27
YOUNGSTOWN, O., TO			
New York	494	37.5	35
Baltimore	375	34.5	30
Philadelphia	415	35.5	32
Detroit	232	26.5	23.5
Fort Wayne, Ind.	256	23	24.5
Erie, Pa.	104	13.5	16.5
DETROIT TO			
Peoria, Ill.	379	32	30
Canton, O.	195	26	21.5
Cincinnati	255	27.5	24.5
Marion, O.	135	21.5	18.5
Defiance, O.	110	20	17
MISCELLANEOUS			
Cleveland-Detroit	166	23.5	20
St. Louis-Moline, Ill.	234	18	23.5

Mileage Scale Laid Down for Official Territory

(Rates are in cents per 100 pounds)

	Cents
5 miles and under	6
10 miles and over 5	6.5
15 miles and over 10	7
20 miles and over 15	8
25 miles and over 20	8.5
30 miles and over 25	9
35 miles and over 30	9.5
40 miles and over 35	10
45 miles and over 40	10.5
50 miles and over 45	11
55 miles and over 50	11.5
60 miles and over 55	12
65 miles and over 60	12.5
70 miles and over 65	13
75 miles and over 70	13.5
80 miles and over 75	14
85 miles and over 80	14.5
90 miles and over 85	15
95 miles and over 90	15.5
100 miles and over 95	16
105 miles and over 100	16.5
110 miles and over 105	17
120 miles and over 110	17.5
130 miles and over 120	18
140 miles and over 130	18.5
150 miles and over 140	19
160 miles and over 150	19.5
170 miles and over 160	20
180 miles and over 170	20.5
190 miles and over 180	21
200 miles and over 190	21.5
210 miles and over 200	22
220 miles and over 210	22.5
230 miles and over 220	23
240 miles and over 230	23.5
250 miles and over 240	24
260 miles and over 250	24.5
270 miles and over 260	25
280 miles and over 270	25.5
290 miles and over 280	26
300 miles and over 290	26.5
320 miles and over 300	27
340 miles and over 320	28
360 miles and over 340	29
380 miles and over 360	30
400 miles and over 380	31
425 miles and over 400	32
450 miles and over 425	33
475 miles and over 450	34
500 miles and over 475	35
535 miles and over 500	36
565 miles and over 535	37
600 miles and over 565	38
635 miles and over 600	39
665 miles and over 635	40
700 miles and over 665	41
735 miles and over 700	42
765 miles and over 735	43
800 miles and over 765	44
835 miles and over 800	45
865 miles and over 835	46
900 miles and over 865	47
935 miles and over 900	48
965 miles and over 935	49
1000 miles and over 965	50
1035 miles and over 1000	51
1065 miles and over 1035	52
1100 miles and over 1065	53
1135 miles and over 1100	54
1165 miles and over 1135	55
1200 miles and over 1165	56

points shall not in any instance exceed 20 miles. Rates between basing points should be the scale rates for the distances between such points ascertained in accordance with the distance formula prescribed herein. Joint rates to and from stations which are not basing points should be based on the distance to or from the more distant of the two basing points between which such stations are located, but where both origin and destination are on a single line the rate for the actual distance must not be exceeded.

The Johnstown, Pa., differential of 2 cents per 100 pounds is eliminated. The Wheeling-Steubenville district seems to be put out of the Pittsburgh district group, adjudged too large.

For establishing interstate rates between points in official territory, except points in New England and New York City and its environs, a special basis, taking care of short haul rates and lighterage, has been prescribed. The plea of manufacturers of cast iron pipe that they should receive special treatment on account of sharp competition from southern foundries is denied, and the new rates affect cast iron pipe in official territory. Maximum reasonable rates for interstate transportation of cast iron annealing pots, in carloads, between all points in official territory will be those governing ingot molds.

(*Statistics concerning steel production and consumption, compiled by the interstate commerce commission in its investigation, will be found on page 1753 of this issue.*)

Fears Pittsburgh Gains

Chicago, June 25.—Chicago district producers believe the new rates place them at a disadvantage with Pittsburgh. It is felt Pittsburgh has more ready access to southwestern and northwestern points as Chicago rates would be relatively higher by 1.5 cents to many points. The new rate from Chicago to St. Louis would be 25.5 cents and to Milwaukee 14.5. Rates beyond Chicago under the new scale apply only to Mississippi river points, including the west bank. On hauls 300 miles or over in official territory Chicago may benefit.

Valley Scans New Rates

Youngstown, O., June 25.—Importance to iron and steel shippers in this district of the proposed railroad freight revisions under I.C.C. Docket 17,000, part 6, decision of the commission announced last Saturday, is compelling close and hard study on the part of traffic officers. As yet they are reluctant to be quoted until they are enabled to make careful study of the compared rates.

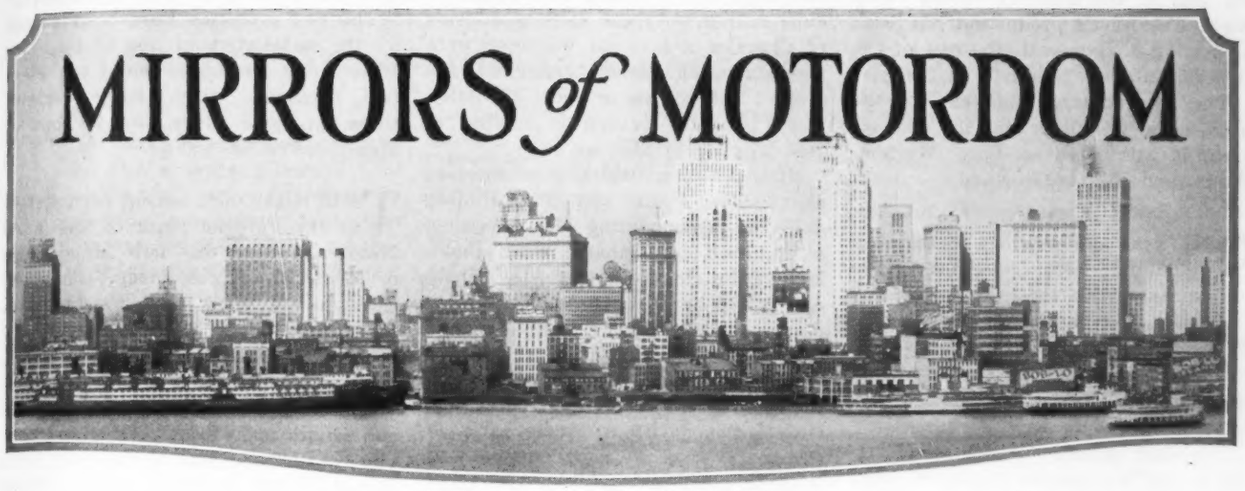
However, two features of the rate finding appear to stand out prominently in the valley rates as proposed. One is that the short-haul distance rates will be increased somewhat as to Cleveland, Canton and points within a radius of 100 miles. The present rate on finished steel from Youngstown to Cleveland is 9½ cents per 100 pounds. Under the proposed schedule, which will take effect Oct. 20, this will be increased to 12.5 cents. At the same time Pittsburgh, which now has a rate to Cleveland of 19 cents, will have a new rate of 18.5 cents.

The other feature, which appears to be something of an offset to the higher short-haul proposals, appears to be that the new rates to middle and farther distant points are considerably more favorable to Youngstown shippers than the old. This especially appears true for steel shipments to Michigan and similar destinations.

Mileage Scale To Apply Within New England

(Rates are in cents per 100 pounds)

	Cents
5 miles and under	6.5
10 miles and over 5	7
15 miles and over 10	7.5
20 miles and over 15	9
25 miles and over 20	9.5
30 miles and over 25	10
35 miles and over 30	10.5
40 miles and over 35	11
45 miles and over 40	11.5
50 miles and over 45	12
55 miles and over 50	12.5
60 miles and over 55	13
65 miles and over 60	14
70 miles and over 65	14.5
75 miles and over 70	15
80 miles and over 75	15.5
85 miles and over 80	16
90 miles and over 85	16.5
95 miles and over 90	17
100 miles and over 95	17.5
105 miles and over 100	18
110 miles and over 105	18.5
120 miles and over 110	19
130 miles and over 120	20
140 miles and over 130	20.5
150 miles and over 140	21
160 miles and over 150	21.5
170 miles and over 160	22
180 miles and over 170	22.5
190 miles and over 180	23
200 miles and over 190	23.5
210 miles and over 200	24
220 miles and over 210	25
230 miles and over 220	25.5
240 miles and over 230	26
250 miles and over 240	26.5
260 miles and over 250	27
270 miles and over 260	27.5
280 miles and over 270	28
290 miles and over 280	28.5
300 miles and over 290	29
320 miles and over 300	29.5
340 miles and over 320	31
360 miles and over 340	32
380 miles and over 360	33
400 miles and over 380	34
425 miles and over 400	35
450 miles and over 425	36.5
475 miles and over 450	37.5
500 miles and over 475	38.5
535 miles and over 500	39.5
565 miles and over 535	40.5
600 miles and over 565	42
635 miles and over 600	43
665 miles and over 635	44
700 miles and over 665	45



Low-Priced Car Sales Run Up Auto Output Record

* * * * * * * * *

Automotive Earnings Decline as Steel Profits Rise

Detroit, June 25

AUTOMOBILE production seems definitely to have passed the crest of its first half year effort, the official May total of the department of commerce being 603,969 units compared with the alltime record of 621,331 in April, thereby giving the industry opportunity to analyze its extraordinary performance.

In the first five months of this year, 2,677,781 passenger cars and trucks have been assembled, or 48.4 per cent more than the 1,804,725 units in the comparable period of 1928.

For this striking gain it has been said frequently that trucks are largely responsible. In five months 348,890 trucks have been made, against only 195,367 a year ago. For passenger car production the comparison is 2,319,636 this year and 1,606,602 last year.

Thus, the increase in truck production this year has been 78.6 per cent, and in passenger cars only 44.4 per cent. But it also is true that the passenger cars made thus far in 1929 exceed the total of passenger cars and trucks in the same period of 1928 by more than 500,000 units. Not a truck could have been made this year, and still last year's production would have been paled.

Likewise the palm has been bestowed upon exports. It is true that exports have increased tremendously. Detailed foreign trade statistics are now available only for the first four months of 1929, but in that period 231,508 cars and trucks were shipped abroad, contrasted with 168,196 in the first four months of 1928.

The inescapable fact is, however, that while total production in this country increased 50.2 per cent in this four-month period, exports expanded only 37.6 per cent. Last year exports constituted 12.2 per cent of the total production of the opening four months; this year only 11.2 per cent. Therefore the part played by foreign trade is not so conspicuous.

Still another hypothesis attributes all credit to the comeback of the Ford Motor Co., and this is not far from correct. From Jan. 1 to May 31 the Ford company turned out 742,130 cars and trucks, nearly five times the 123,718 produced in the same five months of 1928.

In other words, total production of automobiles in five months soared 863,056 units over last year, while Ford output jumped 618,412. Chevrolet's comparisons are 672,732 units for the first five months of this year and 618,791 for last year, an increase of 53,941 units. Thus Ford and Chevrolet account for 78 per cent of this year's aggregate increase.

The deduction, therefore, is that although industry was taking more trucks and foreign markets were being exploited as never before, it was the purchasing of low-priced cars by the good old reliable John Citizen that made possible the record-breaking performance of the automobile industry this year.

Ford is reliably reported to have unfilled orders for several hundred thousand units, to say nothing of the normal increase in its market plus 7,000,000 Model T's yet to be replaced. Chevrolet's order books are understood to be three times heavier than a year ago. Stock market weakness and unsettled prices of agricultural products are not believed to have disturbed seriously that purchasing power of these producers' "public." On this basis steel mill representatives here look for an extraordinary summer in the automotive industry.

* * *

DOMINANT as General Motors appears in the automotive picture, it has been a laggard in the record-breaking five months.

Ford's extraordinary increase of 499 per cent over the opening five months of 1928 is due, of course, to the fact production of Model A was just getting under way a year ago. Excluding Ford in both years, automotive output in the first five months of this year was 1,935,651 units, and a year ago 1,681,007. This is an increase of about 15.2 per cent for the entire industry outside of Ford.

While there is a little variance between actual production and sales to dealers, nevertheless, General Motors is not addicted to oversupplying its retail outlets. In the first five months of this year General Motors has turned over 971,114 units to its dealers, compared with 897,156 a year ago. The increase is only 8.2 per cent, or

about one-half the rate of gain of the rest of the industry except Ford. Since Chevrolet's production has been advancing 8.7 per cent, the rest of the General Motors "family" has lagged.

The big increase this year, of the large-scale producers in the Detroit area, is attributed to Ford, Hudson-Essex and Willys-Overland.

* * *

ONE year ago earnings of the steel industry were being compared unfavorably with those of its leading customer—the automotive industry. This year the spread has been narrowed considerably, as steel earnings have tended moderately upward and automotive profits have shrunk.

The steel industry is not broadcasting it, but automotive buyers of steel generally are paying more than a year ago—up to $2 per ton on some products. In the case of sheets the discount for prompt payment is only one-half of 1 per cent, contrasted with 2 per cent a year ago. The deferred delivery situation has entailed higher costs because of the necessity of piecing-out at times through warehouse purchases and the constant tracing and following of mill shipments to minimize transportation delays.

Each year the automotive retail sales situation becomes more highly competitive. More value per car, both inherently and in accessories, is offered the public. The sales resistance to certain lines, notably Buick and Chrysler in the past year, has been a factor.

Normally, Buick and Chevrolet are heavy contributors to General Motors' profit. Although Chevrolet sales have increased 8.7 per cent over a year ago, this division has encountered additional costs, especially in machining its 6-cylinder motor, and it is not believed it has turned any more profit—if as much—back into the General Motors' treasury as a year ago. Buick's sales have been higher than generally believed, but there have been heavy expenditures in overcoming resistance to the new body type, which apparently will be modified in the 1930 models.

The matter of overhead compels attention. Most producers have expanded rapidly in the past 18 months, although record output has enabled this to be spread farther. In times less active than the past five months, however, this added capacity will hang over the industry.

Steel producers are watching the earnings situation carefully with regard to its bearings upon steel prices later in the year.

* * *

CHRYSLER promises to lend more support next month to the production situation. Ten thousand of the new 65 and 75 models are scheduled for July, or practically ten times the June output. At the DeSoto division of Chrysler a new car will come into production next month, augmenting the present DeSoto rate of about 250 daily. The Plymouth division is holding at 900 daily and Dodge at 550.

Hudson-Essex, which continues at about 900 Essex and 200 Hudson daily, is accumulating parts against a shutdown next month. When Cadillac-LaSalle closes for the July 4 holiday it will be down three weeks for a plant changeover which will give it a daily capacity of 375 to 400 units.

Oakland-Pontiac is maintaining a schedule of 1400 units daily, Willys-Overland 1000, Ford 7300 to 7400, Chevrolet 6300 to 6400, Lincoln 40, Packard 190 and Oldsmobile 150. Buick is rated at 500 daily at this time, but this is almost entirely the new Marquette model. The new Buick, with an enclosed brake system and a body somewhat deflated from this year's model, will shortly be in production.

* * *

NO SMALL benefit has accrued to the steel industry, especially the sheet mills, from the decided trend toward closed bodies. In 1926 the percentage of closed models was 72, in 1927 it increased to 82 and in 1928 to 88.5. It is believed that 1929 will run the percentage up to 90.

For an average closed car the sheet mills supply 30 pounds for the hood tops, 30 pounds for the hood sides, 25 pounds for the running board shields, 100 pounds for the four door panels, 30 pounds for the cowl, 100 pounds for the upper and lower rear quarters, 40 pounds for the back panel, 70 pounds for the front fenders (a Ford front fender weighs 29 pounds, a Chevrolet 27 and a Buick 45), 50 pounds for the rear fenders, 20 pounds for the roof rails, 50 pounds for trim strips, 25 pounds for the running boards, 15 pounds for the dashboard, and 25 pounds for floor panels and instrument boards.

This totals 610 pounds of sheets for the body alone. For concealed parts, such as the crankcase, specifications call for about 12 pounds. For frames the average is 150 pounds. Fender stock usually is No. 19 gage, hood tops and sides 20 to 22, running board shields 22, door panels 20, cowl 19 or 20, crankcases 16 and upper and lower rear quarters 20.

* * *

FOR conditioning and replacing worn machine parts, tools and dies at the Fordson plant of the Ford Motor Co. nearly 150,000 pounds of special steels is required daily. Meanwhile, there is a high content of molybdenum, chromium, nickel, cobalt, tungsten and vanadium in the steel that passes daily to the scrap heap.

The two problems have been solved by the installation of one 50-ton, two 10-ton, one 3-ton and one 1-ton electric furnaces, which daily reclaim these expensive alloys from 50 tons of high-speed steel scrap.

* * *

THIS is the open season for tourists at the Fordson plant of the Ford Motor Co. Each day now an average of 400 persons is being conducted through the plant, and the peak is far from reached. Last year 112,000 persons visited the Fordson plant, compared with 45,000 in 1927, and this year a big increase is expected. Special guides make hourly trips and special buses are chartered from the Detroit Street Railways. For tourists to drive 125 miles out of their route to see how Fords are made is not uncommon.

Steel Employment in May Shows Further Gain

Washington, June 25.—Industrial employment increased 0.2 per cent in May compared with April, and payroll totals increased 0.7 per cent, according to the bureau of labor statistics. All industries in the iron and steel group, except steam fittings, continued to expand in May.

The level of employment in May was 6.7 per cent higher than in May, 1928. Notable increases in employment in May compared with May of last year were over 30 per cent in machine tools and shipbuilding over 20 per cent in agricultural machinery, over 15 per cent in foundry products and autmobiles, and 6.5 per cent in iron and steel.

Memorial to Steel Man

A striking memorial to the memory of David Kyle, vice president and general manager of the Algoma Steel Corp., Sault Ste. Marie, Ont., from 1910 to 1920, was unveiled June 2 at the plant. The memorial is in the form of a bronze steel ingot on a granite pedestal with an appropriate inscription. Mr. Kyle was popular with officials and the employes, and the cost of the memorial is being defrayed by a general subscription.

New officers of the Rockford, Ill., chapter of the American Society for Steel Treating are as follows: Chairman, C. R. Crain, Mattison Machine Works; vice chairman, Fred Hockman, National Lock Co.; secretary-treasurer, O. T. Muehlmeyer, 700 Race street.

Steel Capacities of Districts Given; Corp.-Bethlehem Lead Big

MORE than 90 per cent of the steel of the United States is produced within the territory covered by the interstate commerce commission in its investigation leading to the mileage rate decision in Docket 17,000, as given on pages 1749 and 1750 of this issue.

Producing points in official territory are assigned to three geographic divisions. The eastern district comprises New England, eastern New York, New Jersey, Maryland, Delaware and eastern Pennsylvania. The middle district includes the Buffalo district of New York, western Pennsylvania, West Virginia and eastern Ohio. The western district takes in western Ohio, Kentucky, Michigan, Illinois, Indiana and Wisconsin.

Following are the ingot capacities and the capacity for manufacturing iron and steel articles by cities for each division:

Producing points	Ingot capacity (long tons)	Capacity for manufactured iron and steel articles (net tons)
Eastern district:		
New England—		
Worcester, Mass.	180,000	172,000
Bridgeport, Conn.	125,000	100,000
Bridgewater, Mass.	.....	35,000
New Haven, Conn.	.....	30,000
New Britain, Conn	34,000	12,000
Eastern New York—		
Syracuse	63,160	49,300
Troy	.....	60,000
Rensselaer	.....	47,000
New Jersey—		
Trenton-Kinkora	150,000	90,000
Harrison	83,350	34,400
Perth Amboy	50,000	35,000
Maryland—		
Sparrows Point	1,020,000	480,000
Baltimore	.....	60,000
Cumberland	.....	30,000
Delaware—		
Claymont	360,000	225,000
New Castle	160,000	.....
Eastern Pennsylvania—		
Bethlehem	1,512,000	1,085,000
Coatesville	1,226,480	818,200
Steelton	776,000	130,000
Ivy Rock	529,000	125,000
Harrisburg	325,000	266,000
Philadelphia	294,540	135,000
Pencoyd	240,000	222,000
Phoenixville	225,000	150,000
Pottsville	200,000	180,000
Reading	46,128	225,000
Lebanon	.....	221,500
Burnham	165,000	45,000
Middle district:		
New York-Buffalo district—		
Lackawanna	1,824,000	690,000
Buffalo	690,000	470,000
Western Pennsylvania—		
Pittsburgh	2,144,000	2,648,040
Munhall	2,548,500	1,677,000
Johnstown	1,928,000	825,000
Duquesne	1,388,800	822,500
Woodlawn	1,140,000	840,000
Braddock	1,474,000	215,000
McKeesport	686,600	729,800
Monessen	665,000	606,000
Clairton	636,000	504,000
New Castle	770,000	232,400
Farrell	624,000	299,500
Midland	600,000	264,000
Donora	550,000	224,000
Brackenridge	372,000	218,000
Vandergrift	324,000	226,000
Butler	360,000	131,500
Etna	.....	231,000
Leechburg	.....	230,600
Elwood City	.....	226,500
Sharon	.....	205,000
McKees Rocks	.....	202,000
Economy	.....	200,000
Homestead	.....	165,000
Erie	112,500	20,000
West Virginia—		
Weirton	570,000	375,000
Benwood	453,000	157,000
Wheeling	.....	149,600
Follansbee	84,000	57,900
Eastern Ohio—		
Youngstown	5,180,000	2,486,200
Cleveland	2,631,000	1,485,400
Canton	1,070,000	912,000
Lorain	1,365,000	519,000
Steubenville	600,000	565,000
Warren	500,000	537,600
Massillon	400,000	488,000
Mingo Junction	600,000	.....
Bellaire	420,000	.....
Struthers	.....	376,000
Niles	.....	360,000
Lowelville	.....	360,000
McDonald	.....	340,000
Zanesville	.....	218,000
Toronto	92,400	53,600
Western district:		
Western Ohio—		
Portsmouth	448,000	312,000
Middletown	507,000	163,260
Mansfield	185,000	100,000
Ironton	.....	50,000
Kentucky—		
Ashland	520,000	134,480
Newport	300,000	131,000
Michigan—		
Springwells	50,000	210,000
Ecorse	.....	50,000
Indiana—		
Gary	3,240,000	2,980,800
Indiana Harbor	2,440,000	1,129,000
East Chicago	.....	220,000
Kokomo	120,000	120,000
Illinois—		
South Chicago	2,772,000	1,157,200
Chicago	952,400	598,800
Joliet	708,000	437,700
Granite City	360,000	230,000
Peoria	140,000	125,000
Alton	150,000	90,000
Waukegan	.....	190,000
Chicago Heights	86,435	101,000
Wisconsin—		
Milwaukee	.....	327,800

Summarizing, the rated capacities for these divisions are as follows:

District	Ingot capacity (long tons)	Manufactured iron and steel articles (net tons)
Eastern district:		
New England	403,650	403,000
Eastern New York	120,160	279,000
New Jersey	329,850	341,500
Maryland-Delaware	1,579,000	795,000
Eastern Pennsylvania	5,688,148	4,546,450
Totals, eastern district	8,120,808	6,364,950
Middle district:		
Buffalo district, New York	2,545,350	1,399,000
Western Pennsylvania	16,789,250	13,058,250
West Virginia	1,108,000	980,900
Eastern Ohio	13,218,400	9,326,735
Totals, middle district	33,661,000	24,764,885
Western district		
Western Ohio	1,155,000	710,760
Indiana	5,800,000	4,812,600
Michigan	57,200	332,000
Kentucky	820,000	280,480
Illinois	5,168,835	3,347,700
Wisconsin	24,500	363,800
Totals, western district	13,025,535	9,847,340
Grand totals	54,807,343	40,977,175

By states, the commission has developed percentages of consumption of rolled steel in official classification territory, this territory embracing 75.63 per cent of the total consumption of the United States:

State	Percentage
Pennsylvania	21.7
Illinois	14.32
Ohio	9.70
Michigan	8.08
Indiana	6.93
New York	5.31
New England States	3.75
New Jersey	3.23
Delaware, Maryland and District of Columbia	1.59
Virginia	1.02
Total	75.63

Of the more than 200 companies producing in official territory, two—the Bethlehem Steel Co. and the United States Steel Corp.—account for nearly one-half of the capacity for manufactured steel of the entire territory. This comparison is presented in the subjoined table.

Value of Buffalo-made foundry and machine shop products in 1927 was $29,849,540.

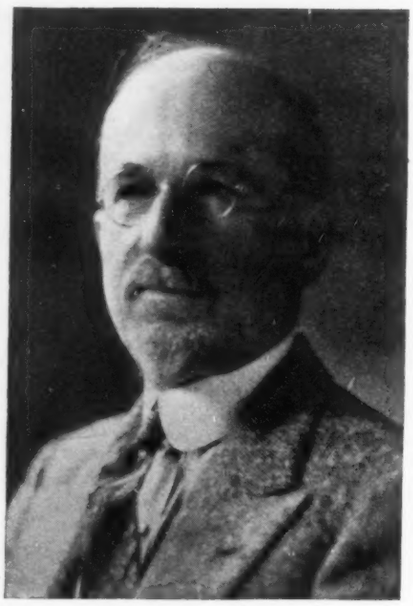
Position of Steel Corp. and Bethlehem Compared

District	Ingot capacity (long tons)	Per cent of district	Manufactured iron and steel (net tons)	Per cent of district
Eastern district, totals	8,120,808	.....	6,364,950	....
Bethlehem Steel Co.	3,848,000	47.3	2,174,500	34
United States Steel Corp.	420,000	5	578,000	9
Middle district, totals	33,661,000	....	24,764,885	....
Bethlehem Steel Co.	3,752,000	11	1,515,000	6
United States Steel Corp.	14,040,300	41.7	8,941,100	36
Western district, totals	13,025,535	.....	9,847,340	....
Bethlehem Steel Co.	.....	.....	.....	....
United States Steel Corp.	6,720,000	51.5	5,241,300	53
Grand totals	54,807,343	.....	40,977,175	....
Bethlehem Steel Co.	7,600,000	13.9	3,689,500	9
United States Steel Corp.	21,180,300	38.6	14,760,400	36

The United States Steel Corp. produces through the following subsidiary companies: American Bridge Co., American Sheet & Tin Plate Co., American Steel & Wire Co., Carnegie Steel Co., Illinois Steel Co., Lorain Steel Co., and National Tube Co.

Industrial Men in the Day's News

T. D. Lynch, New President, American Society for Testing Materials



THIRTY years with one company have seen him rise from inspector of raw materials to consulting metallurgical engineer.

GRADUATING as a civil engineer, he early turned his attention to metallurgy and is author of numerous technical papers, dealing with that subject.

HIS interest in the advancement of metallurgy is demonstrated by his willingness to serve in office or on committees of many important technical organizations.

TILLMAN DANIS LYNCH, who late this week takes office as president of the American Society for Testing Materials at its thirty-second annual meeting at Atlantic City June 24 to 28, has long been identified with that organization and similar metallurgical bodies and for them has accomplished much constructive work. He has been affiliated with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., constantly since 1899, latterly as consulting metallurgical engineer and as manager of the material and process engineering department. He previously had served respectively as inspector of raw materials, engineer of tests and section engineer.

Mr. Lynch was graduated from West Virginia university, Morgantown, W. Va., in 1891 with a civil engineer's degree. He was engaged in various engineering positions of increasing importance until 1896 when he became inspector of steel for the United States navy. There he remained for three years until 1899, when he was employed by the Westinghouse company as inspector of raw materials.

He has always shown keen interest in the affairs and activities of the American Society for Steel Treating and like bodies. He served a term as its vice president from 1919-20 and in 1922 was elected president. He was a director of the American Society for Testing Materials for two years, 1925-26, and in 1927 was elected vice president, in which office he has remained to date. He also was a member of the Americn Society's executive committee for four years. He also is chairman of the metallurgical advisory board of the Carnegie Institute of Technology, Pittsburgh and the United States bureau of mines, Pittsburgh division. In addition he holds memberships in the Engineers' Society of Western Pennsylvania and the International Society for Testing Materials. As a delegate of the American Society for Testing Materials, he presented a paper on "Materials Testing as a Stimulus to Research" before the International Congress for Testing Materials held in Amsterdam, Holland, in September 1927.

Mr. Lynch is author of many important technical papers presented before national conventions of the societies of which he is a member, and is a contributor to the technical press.

Men of the Industry

WILLARD A. Johnson, with many years of sales experience with the National Acme Co., Cleveland, manufacturer of automatic machinery, has been appointed manager of the eastern offices at 117 Liberty street, New York. He succeeds Harry T. Latto, resigned. Mr. Johnson was at one time connected with the eastern offices and later represented the company in the Ohio territory. The territory now coming under his supervision comprises New England, eastern New York and Pennsylvania, New Jersey, Delaware, Maryland, the District of Columbia and Virginia.

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M. J. Bernet has been elected vice president of the Geometric Stamping Co., Cleveland.

* * *

Harry J. Hooks, secretary-treasurer of the Wolverine Tube Co., Detroit, has been elected to the board of directors of the Ferndale State bank, Ferndale, Mich.

* * *

G. H. Brinkmeyer has been appointed manager of the St. Louis office of the Pennsylvania Lubricating Co., Pittsburgh. The new office is located in the Chemical building, St. Louis.

* * *

George C. Reineke, vice president and general manager of the Estey Mfg. Co., Owosso, Mich., has been elected a director of the Citizens Savings bank, Owosso,

* * *

R. C. Brand, for 10 years in direct contact with the oil industry, has been appointed director of sales of power transmission, elevating and conveying chains to that trade for the Union Chain & Mfg. Co., Sandusky, O.

* * *

W. F. McKay, chief engineer for the International Oxygen Co., Newark, N. J., has returned on the Olympic after an extended business and pleasure tour of England, Scotland, France and Germany.

* * *

Vincent S. Bennett, treasurer and general manager of the firm of Stewart & Bennett Inc., general contractor, Rochester, N. Y., has been elected a director of the Rochester Trust & Safe Deposit Co.

* * *

W. Spraragen, technical secretary of the American Welding society, secretary of the American Bureau of Welding and secretary of the engineering division of the National Research council, 29 West Thirty-ninth street, New York, is in Europe. He expects to return to the United States about July 25.

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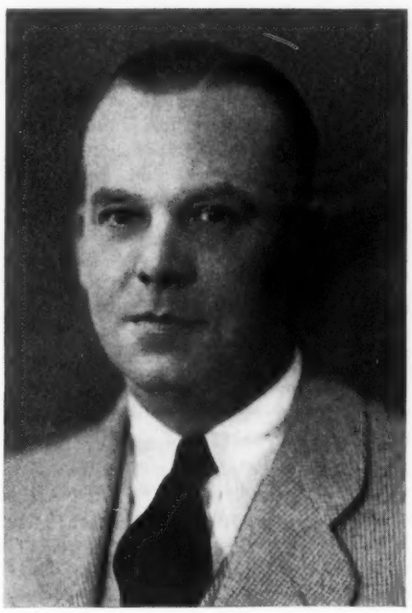
A. A. Morrison, formerly associated with the Morrison & Risman Co., has



WILLARD A. JOHNSON

formed the A. A. Morrison Co., trading in iron and steel scrap, with offices at 401 Lafayette building, Buffalo.

* * *

A. Y. Sawyer of Joseph T. Ryerson & Son Inc., Chicago, has been elected to direct the activities of a new cold-rolled strip steel department which has been created under the general control of E. D. Graf, vice president.

* * *

Charles H. Dahlquist, for many years with the Timken-Detroit Axle Co., Detroit, is now sales manager for the Superior Universal Products Co., Bowling Green, O., manufacturer of universal joints, radius rods, drag links and tie rods.

* * *

Julian D. Conover, for seven years, since its inception, secretary of the Tri-States Zinc and Lead Ore Producers' association, has been appointed secretary of the American Zinc institute, New York. He succeeds Stephen S. Tuthill, whose resignation effective Aug. 1 first was reported in IRON TRADE REVIEW of May 9.

* * *

O. H. Broxterman, for a number of years president of the John Steptoe Co., Cincinnati, machine tool builder, has established his own business in Cincinnati as manufacturers agent.

* * *

S. Bracken, formerly operating superintendent of Hawthorne works, Chicago, of the Western Electric Co., 195 Broadway, New York, has been appointed assistant engineer of manufacture at that plant. He succeeds the late Edward D. Hall, whose death was noted in IRON TRADE REVIEW of May 23.

* * *

F. B. Danehower, formerly vice president and treasurer of the Ross-Tacony Crucible Co., Tacony, Philadelphia, has been elected president to succeed the late Henry A. Ross. He still retains the office of treasurer.

Walter L. Ross Jr. was elected vice president and assistant treasurer.

Charles C. Bacon continues as secretary. He as well as Mr. Danehower has been with the company for more than 25 years.

* * *

W. C. Sutherland has been appointed assistant to the president of the Pittsburgh Steel Co., succeeding the late A. R. Maxwell. Mr. Sutherland formerly was general superintendent of the company's Monessen, Pa., works.

D. P. King, assistant to Mr. Sutherland, succeeds the latter at Monessen.

* * *

Alexander Blackwood, formerly general manager of the Chicago Steel Foundry Co., Chicago, but who resigned that post last September to organize and head the International Steel Corp., Canton, O., has resigned the latter connection to become general manager of the Wehr Steel Co., Milwaukee. Mr. Blackwood has had extensive experience in steel foundry management. For seven years he was vice president of the Michigan Steel Casting Co., Detroit, and for three years was general manager of the Farrell-Cheek Steel Foundry Co., Sandusky, O.

* * *

F. S. Chase, president of the Chase Companies Inc., Waterbury, Conn.,

has been elected a director of the Kennecott Copper Corp., New York, with which his company recently was merged.

* * *

A. B. Carriere now represents the Eastern Bridge & Structural Co., Worcester, Mass., in Hartford, Conn. He succeeds the late H. A. Wilcox.

* * *

R. L. Leitch has been elected vice president and a director of the Clark Car Co., Pittsburgh. Until recently Mr. Leitch was secretary and treasurer of the Fort Pitt Spring & Mfg. Co., McKees Rocks, Pa.

* * *

John W. Tambert, for five years in charge of the cost and manufacturing departments of the Perfex Corp., Milwaukee, manufacturer of heavy duty radiators, has been named secretary and treasurer to succeed C. G. Phelps, resigned.

* * *

Harbour Mitchell, formerly resident manager of the Pittsburgh office of E. J. Lavino & Co., and recently transferred to the company's headquarters at Philadelphia, has been elected assistant to the president of E. J. Lavino & Co. Mr. Mitchell also is a director of that company.

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Roy C. McKenna, president of the Vanadium Alloys Steel Co., Latrobe, Pa., was recently elected a director of the Vulcan Mold & Iron Co., Latrobe.

Edward R. Williams was elected vice president of the Vulcan company, a newly-created office.

* * *

Chester H. Gibbons, formerly advertising manager for the Marion Steam Shovel Co., Marion, O., has been transferred to special duty in the engineering department.

Clarence E. Silva has been transferred from sales work in the New York office to the home office to become advertising manager.

* * *

J. K. Furst has been elected president of the S. R. Smythe Co., Pittsburgh, consulting and contracting engineer for steel plants, to succeed the late R. T. McCormick.

M. E. Browne has been elected secretary, to succeed L. B. Schmidt, secretary and treasurer, resigned from the former office.

W. H. Reilly has been appointed chief engineer.

* * *

Carl S. Neumann, Union Mfg. Co., New Britain, Conn., has been elected president of the Connecticut Foundrymen's association for the ensuing year. Other newly elected officers are: Vice president, Burton W. Spencer, Bradley & Hubbard Mfg. Co., Meriden, Conn.; secretary, Charles S. Parker, Charles Parker Co., Meriden, Conn.; treasurer, George R. Holmes, McLagon Foundry Co., New Haven, Conn. The board of managers is comprised of the officers and the following: H. B. Browne, McLagon Foundry Co., New Haven, Conn.; J. D. Coltman, Bullard Machine Tool Co., Bridgeport, Conn.; W. J. Maton, Waterbury Farrell Foundry & Machine Co.; Waterbury, Conn.; G. A. Ray, Taylor & Fenn, Hartford, Conn.; H. S. Washburn, Plainville Castings Co., Plainville, Conn.

May Iron, Steel Output Up in Canada

Toronto, Ont., June 25.—Production of coke pig iron in Canada in May was 81,464 long tons, an increase of 3 per cent over the 79,341 tons produced in April but 7 per cent under the 87,811 tons reported for May, 1928. Output of foundry iron declined from 19,039 tons in April to 5800 tons in May; basic iron, however, advanced from 57,639 tons in April to 63,972 tons in May, and malleable iron from 2663 tons in April to 11,692 tons in May.

Blast furnaces blowing May 31 remained at six, the same as on April 30. Active furnaces had a daily capacity of 2475 long tons per day, and were: Dominion Iron & Steel Co., Sydney, N. S., two; Steel Co. of Canada Ltd., Hamilton, Ont., two; Algoma Steel Corp., Sault Ste. Marie, Ont., two. Since June 1 the Canadian Furnace Co., Port Colborne, Ont., blew in its "Victoria" furnace, with a capacity of 500 tons per day.

For the five months ending with May, production of pig iron was 428,684 long tons, compared with 370,634 tons for the corresponding period of 1928, and 334,276 tons produced during the first five months of 1927.

Production of ferroalloys during May at 6351 tons was 11 per cent over the 5744 tons reported for April. Production for five months totaled 30,332 tons, compared with 21,857 tons last year.

Production of steel ingots and direct steel castings in Canada during May amounted to 126,372 long tons, compared with 122,102 tons in April, and 117,655 tons in May, 1928.

For the five months of this year the steel ingots and direct steel castings output was 619,337 tons, 17 per cent over the 631,808 tons of last year.

Fuel briquets made in the United States in 1928 totaled 947,423 tons.

Commonwealth Owners To Get $35,000,000

St. Louis, June 25.—Purchase of the Commonwealth Steel Co., Granite City, Ill., by the General Steel Castings Co., Philadelphia, has resulted in a corporation valued at $51,000,000. This fact became known with the public offer of $20,000,000 of 5½ per cent first mortgage bonds by the latter company.

Proceeds of the sale of the Commonwealth company total about $35,000,000 for division among the stockholders, of which Clarence H. Howard, president; Harry M. Pflager, senior vice president, and Harrison Hoblitzelle, vice president and sales manager, are among the largest. The Commonwealth has operated on a profit-sharing scheme, and many employes are stockholders as a result of annual offerings of shares.

The merged company will have two main plants, the one at Granite City occupying 200 acres and with rated capacity of 5000 tons of finished steel castings per month, and a new plant under construction at Eddystone, Pa., which will occupy a site of 112 acres adjacent to the Baldwin Locomotive Works.

The Commonwealth Steel Co. was organized in 1902, and possesses valuable patents for manufacture of steel castings for locomotives and car frames. Its earnings the past five years have averaged above $2,440,000 a year.

In addition to the bonds, the General company is offering for sale 420,000 shares of no par value common stock at $50 per share and 100,000 shares of no par 6 per cent preferred stock, which has a book value of about $10,000,000.

Dr. Sauveur Will Present Campbell Lecture

Dr. Albert Sauveur, Gordon McKay professor of metallurgy and metallography, Harvard university, Cambridge, Mass., has accepted the invitation of the American Society for Steel Treating to present the E. D. Campbell memorial lecture for 1929. This lecture was established by the directors of the society in 1926 to perpetuate the memory of an honorary member, Dr. Edward DeMille Campbell of the University of Michigan, Ann Arbor, Mich. Dr. Sauveur's lecture will be presented on Sept. 11, during the national metal congress and exposition in Cleveland the week of Sept. 9.

Obituaries

OLIVER GEE, treasurer of William W. Hearne Inc., Philadelphia, died at his home in Haddonfield, N. J., June 20, after an illness of about two weeks. He entered the iron and manganese ore business in 1892 with George K. Barns & Co., agents for H. Borner & Co. Ltd., London, and became manager of the business here. When George K. Barns died, Matthew-Addy & Co. took over the Borner agency, with Mr. Gee as manager of this department. N. G. Fergusson, who was junior partner in H. Borner & Co., organized the business of N. G. Fergusson & Co. which later became Fergusson, Wild & Co. Ltd. When Matthew-Addy & Co. discontinued in 1924, William W. Hearne Inc. was organized with Mr. Gee as treasurer.

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Herbert E. Nystrom, sales service manager of Riley Stoker Corp., Worcester, Mass., died June 20.

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Charles E. Bell, 79, president of the C. S. Bell Co., Hillsboro, O., manufacturer of farm bells, steel alloy bells, cane and feed mills and stoves, died June 11 at his home in that city, following an extended illness.

* * *

Robert W. Reed, 40, secretary, Mullins Body & Tank Co., Milwaukee, maker of steel equipment, died June 18. He was the son of William J. Reed, president and treasurer of the Reed-Waite Co., Milwaukee.

* * *

George Paul Dussau, 78, a structural engineer, sent by the French government to the United States to supervise the work of setting up Bartholdi's Statute of Liberty in 1883, died in Berkeley, Calif., June 10.

* * *

Clifford L. Ayers, 66, vice president of the C. L. Ayers Coal Co., Cleveland, and at one time associated with the M. A. Hanna Co. and Becker Steamship Co., both of Cleveland, died June 19.

* * *

W. A. McDonald, 55, of the Milwaukee office sales force of the E. L. Essley Machinery Co., Chicago, died recently as a result of injuries sustained in an automobile accident near Waukesha, Wis., June 12. Mr. McDonald was a native of Cincinnati, but had resided in Milwaukee most of his life. He had been with the sales department of the Essley company for 16 years, and was a brother of J. R. McDonald, vice president of that company and general manager of the Essley company's Milwaukee office.

* * *

J. P. Schneider, general manager of the American Tool & Mfg. Co., Urbana, O., died recently from a stroke of apoplexy. He had been affiliated with that company since its founding in 1914. He was a member of the American Society of Mechanical Engineers.

* * *

William M. Jefferys, director of the Hanging Rock Iron Co., Cincinnati, and superintendent of the company's holdings at Ironton, O., died June 17. He was a native of Grafton, W. Va., and was a pioneer in the iron industry of that section. He owned much coal land in Lawrence county, O.

* * *

Clarence Hayward, 53, former secretary and treasurer of Domhoff & Joyce Co., Cincinnati, pig iron and coke dealer, but who retired from those connections three years ago to enter real estate business in Florida, was drowned, June 15, in an effort to rescue his daughter from the Little Miami river, near Cincinnati.

* * *

Edward H. Bindley, president, Neely Nut & Bolt Co., Pittsburgh, and vice president of the Pittsburgh Steel Co., died June 21 after a brief illness. He was graduated from Yale university in 1900 and became associated with the Pittsburgh Steel Co. shortly after its organization. He had been a director of the company since 1906.

* * *

Peter S. Vanderkloot, 67, president for many years of the Vanderkloot Steel Works, Chicago, died while asleep June 22, having retired apparently in good health. Mr. Vanderkloot was known widely in the steel fabricating industry. As a young man he identified himself with the South Halsted Iron Works, Chicago, which about nine years ago became the Vanderkloot Steel Works.

* * *

John B. Arny, 87, vice president of the Arny Steel Construction Co., died at his home, Elizabeth, N. J., June 21. For 30 years Mr. Arny was employed in the tool room of the Singer Sewing Machine Co. In 1922, he joined with his sons in the business which bears their name and became vice president of the company. He was a native of Alsace-Lorraine and a veteran of the Franco-Prussian war.

* * *

Oliver Ames, 64, owner of the Ames Shovel & Tool Co., North Easton, Mass., and president of the Ames Plow Co., died at his home in North Easton, June 19. He was born in that city, Oct. 21, 1864, and was graduated from Harvard university in 1886 with an A. B. degree. He was a financier of note and was connected with a large group of industrial and banking enterprises. The shovel works of which he was the owner is one of the oldest in the country. Mr. Ames was also vice president and treasurer of Oliver Ames Sons Inc.; vice president of the Ames Shovel & Tool Co. of Texas; president of the First National Bank of Easton; director of the Chicago, St. Paul, Minneapolis & Omaha railroad, the Chicago & Northwestern, Edison Electric Illuminating Co. of Boston, the Old Colony Trust Co. of Boston, the Oregon Short Line railway, the Security Safe Deposit Co., the Western Union Telegraph Co., and a trustee of several Boston hospitals. Mr. Ames also was senior member of the board of directors of the General Electric Co., Schenectady, N. Y., having been on the board since 1893. At that time he was elected to fill the vacancy caused by the death of his father, who prior to the formation of the General Electric Co. was a director of the Thomson-Houston Co.

Improve Falcon Plant

Directors of the Empire Steel Corp., Mansfield, O., have authorized improvements to the Falcon plant at Niles, O., to cost $250,000. The program includes five continuous furnaces, normalizing furnace and additional cold rolling equipment.

Barrow Standard Is Out

Washington, June 25.—The department of commerce is distributing the new standard specifications for wheelbarrows, adopted at the conference held at Washington, April 26.

Sheet Sales Reduced in May; Shipments Up

Sheet sales by independent mills dropped from a daily average of 13,273 tons in April to 9025 tons in May. This was the second consecutive monthly reduction in sales. Production, however, increased from a daily average of 12,508 tons in April to 12,691 tons in May. The daily average for shipments advanced from 12,576 tons in April to 12,656 tons in May. Total tonnages for May were as follows: Sales, 279,783; production, 393,430; shipments, 392,336. May shipments were the largest of any month on record. The National Association of Flat Rolled Steel Manufacturers' complete report for the month follows:

	Net tons	Per cent of capacity
Total sales for May	279,783	82.4
Total production	393,430	115.8
Total shipments	392,336	115.5
Unfilled tonnage as of June 1	713,568	210.1
Approximate finished stock on hand a waiting shipments	119,535	35.2
Approximate in stock, unsold	48,334	14.2

Total number of hot mills in the United States is 722 having a capacity for May, 1929, of approximately 502,600 net tons and the percentage of the capacity to which the figures shown are related is 67.6.

A monthly comparison of sales, production and shipments follows:

	Sales	Production	Shipments
January, 1928	302,921	316,541	274,126
February	266,210	330,565	298,420
March	399,441	366,127	359,552
April	284,070	327,909	327,674
May	250,316	349,367	326,324
June	318,902	311,629	308,741
July	333,357	267,685	278,310
August	254,397	329,396	324,691
September	370,936	318,907	322,876
October	344,614	369,243	354,925
November	346,041	358,402	307,790
December	323,421	302,182	296,687
January, 1929	438,390	391,404	362,229
February	389,496	326,468	325,848
March	464,297	364,202	363,648
April	398,206	375,256	377,274
May	279,783	393,430	392,336

Daily averages for the first four months of the year follow:

	Sales	Production	Shipments
January, 1929	14,142	12,626	11,685
February	13,910	11,659	11,637
March	14,977	11,748	11,731
April	13,273	12,508	12,576
May	9,025	12,691	12,656

Metal Index Stays High

Washington, June 25.—Wholesale price index number for iron and steel for May was 98.4, compared with 98.2 for April and 98.6 for May of last year, taking 1926 at 100, according to the bureau of labor statistics.

Wholesale price index for May for nonferrous metals was 104.9, compared with 113.1 for April and 92 for May of last year. Price index for metals and metal products for May was 105.2, compared with 106.4 for April and 98.6 for May of last year.

Also wholesale May price index number for structural steel was 99.6, compared with 97 for April and 95.8 for May of last year and for other metal products for May it was 98.5, compared with the same for April and 96.9 for May of last year.

Malleable Output Less

Washington, June 25.—Malleable castings production for May shows a slight decline from April, but for the five months of this year a marked gain is noted over the same period of last year. Department of commerce monthly comparisons follow :

1928	Production net tons	Shipments net tons	Orders booked net tons	Per cent of capacity operated
May	67,903	65,823	63,847	70.7
Total, 5 mo.	327,784	318,491	322,938	67.8
June	67,090	66,737	61,071	69.9
July	60,290	60,084	60,964	63.1
Aug.	68,606	66,962	66,128	72.1
Sept.	62,665	61,736	61,163	66.3
Oct.	70,054	63,510	65,780	73.4
Nov.	63,560	58,346	59,664	66.8
Dec.	59,428	56,867	61,182	63.4
Total, year	779,477	752,733	758,890	67.9
1929				
Jan.	73,364	77,424	77,047	77.7
Feb.	73,679	70,914	77,849	77.2
March	83,733	81,425	87,261	87.8
April*	83,838	81,062	80,679	87.6
May**	79,805	78,925	77,262	81.6
Total, 5 mo.	394,419	389,750	400,098	82.3

*Revised.
**Preliminary.

Shape Shipments Higher

Washington, June 25.—Shipments of structural shapes in May at 311,850 tons were the highest of any month for the year. The department of commerce comparisons follow:

	New Orders—Actual tonnage	New Orders—Per cent of capacity	New Orders—Computed tonnage	Shipments computed tonnage
1928				
May	256,525	80	308,000	261,800
June	249,045	78	300,000	261,800
July	246,561	77	296,450	265,650
August	293,819	92	354,200	288,750
September	265,610	83	319,550	273,350
October	207,696	65	250,250	319,550
November	199,129	63	242,550	281,050
December	198,445	64	246,400	277,200
Total, 1928		71	3,287,600	3,072,300
1929				
January	205,659	69	246,400	273,350
February	222,723	70	269,500	238,700
March	296,313	93	358,050	277,200
April	275,424	87	334,950	304,150
May	276,116	90	346,500	311,850

Reports received from April to December, 1928, were from 201 to 241 firms with a capacity of 308,000 tons to 322,000 tons.

The Vanadium-Alloys Steel Co., Latrobe, Pa., declared an extra dividend of $2 payable July 15 to record June 20 and regular quarterly dividend of 75c, payable June 29 to record June 20.

May Auto Production Slightly Lower

Washington, June 25.—May production of automobiles in the United States and Canada shows a slight decline from the record set in April. In the United States 603,969 cars and trucks were made. The Canadian output was 31,559 units. The following department of commerce table gives the monthly comparisons:

	United States			Canada†
1928	Total	Passenger cars**	Trucks	Total
May	425,783	375,356	49,920	33,942
Total, 5 mo.	1,804,725	1,606,602	195,367	96,589
May	425,783	375,863	49,920	33,942
June	396,796	356,622	40,174	28,399
July	392,086	338,792	53,294	25,226
Aug.	461,298	400,593	60,705	31,245
Sept.	415,314	358,891	56,423	21,193
Oct.	397,284	340,146	57,138	18,536
Nov.	*257,140	217,454	*39,686	11,769
Dec.	*234,116	205,993	*28,123	9,425
Total, year	*4,358,759	3,827,849	*530,910	242,382
1929				
Jan.	*401,036	347,382	*51,590	21,501
Feb.	*466,352	405,708	*58,536	31,287
Mar.	*585,093	513,266	*69,748	40,621
April	*621,331	537,225	*82,420	41,901
May	603,969	516,055	86,596	31,559
Total 5 mo.	2,677,781	2,319,636	348,890	166,869

*Revised. **Includes taxicabs. †Reported by dominion bureau of statistics.

Will Celebrate Fiftieth Anniversary

The fiftieth anniversary of its organization will be celebrated by the American Society of Mechanical Engineers, April 5-9, 1930. The preliminary meeting of the society was held Feb. 16, 1880, in the offices of the *American Machinist*, New York, while the organization meeting was held April 7 of the same year in the auditorium of Stevens Institute of Technology, Hoboken, N. J. The society plans to hold appropriate ceremonies at both of these places in celebration of its half century of activity. Invitations have been issued to engineering societies and engineering schools throughout the world to send delegates to the event.

Want Rate Cut Deferred

St. Louis, June 11.—St. Louis and Chicago pig iron producers have appealed to the interstate commerce commission for suspension of the proposed freight rate on southern pig iron from Birmingham, Ala., to St. Louis, to have become effective June 13. The present rate is $4.42 per gross ton. The published rate which southern interests proposed to establish was $3.69, a reduction of 73 cents a ton.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

BROWN & SHARPE CO. is the name of a new corporation formed to take over the sale of products of the Brown & Sharpe Mfg. Co., Providence, R. I., in Chicago, Cleveland, Detroit and Cincinnati territories. The office at Chicago is located at 626 Washington boulevard; at Cincinnati at 814 Chamber of Commerce building; at Cleveland at 424 Penton building and at Detroit at 500 Curtis building. W. H. Stewart and J. H. Devlin will have charge of machine tools and small tools, respectively, at Cleveland; G. C. Newell at Cincinnati; J. G. Swinburne and R. R. Grimes of machine tools and small tools, respectively, at Detroit.

* * *

INTERSTATE IRON & STEEL CO., Chicago, has moved its Detroit office to 8-225 General Motors building.

* * *

CENTRAL ALLOY STEEL CORP. is planning additions to its plant at Massillon, O., to increase production of sheets about 40 per cent.

* * *

HILB & BAUER, Cincinnati, dealers in scrap iron and steel, have moved their offices from 502 to larger space at 505 Traction building.

* * *

INTERNATIONAL OXYGEN CO., Newark, N. J., has placed on the market a welding and brazing flux suitable for all metals and adaptable to electric welding.

* * *

BUFFALO FOUNDRY & MACHINERY CO. will erect an additional storage warehouse at its plant in Fillmore avenue, Buffalo, at an estimated construction cost of $25,000.

* * *

HOWARD BRASS FOUNDRY, 2701 Fulton street, Chicago, has moved to Franklin Park, Ill. The name of the company has been changed to Howard Foundries Inc.

* * *

CENTRAL ALLOY STEEL CORP., Massillon, O., has booked an order from the Nickel Plate railroad for Toncan iron for 125 gondola cars. This is the third order for railroad cars within two months specifying this rust-resisting material. Its purpose is to reduce weight without lessening carrying capacity.

* * *

NAPOLEON STAMPING CO., Napoleon, O., formerly owned by Sidney Thompson, Defiance, O., has been bought by C. O. Miniger of the Electric Autolite Co., and C. F. McIntyre, Monroe, Mich.

* * *

EGAN, WEBSTER & CO., Pittsburgh, sellers of refractories, have leased a large deposit of high temperature siliceous clay lands at Schoenberger, Pa., on the main line of the Pennsylvania railroad. This material is used for bessemer converter linings.

* * *

LINDE AIR PRODUCTS CO., New York, has established an oxygen plant at 2603 Floyd street, Louisville, Ky., to supply that territory. M. R. Frye is superintendent and the plant is under supervision of W. L. Potts, district superintendent, Cincinnati.

* * *

MEAD-PENN IRON WORKS CO., Meadville, Pa., through its subsidiary, Cooling Engineering Co., has taken a contract from the Carnegie Steel Co., Pittsburgh, for a water cooling and purifying plant, requiring 400 tons of plates and shapes.

* * *

INDIA MACHINE & RUBBER MOLD CO., Akron, O., manufacturer of a collapsible tire building core, chuck and drum, has passed to the control of R. Dent McDowell, president, and C. Blake McDowell, secretary. M. D. Tremelin is vice president.

* * *

NEU-FLAME LTD., recently incorporated in Ontario as a subsidiary of an English company of the same name, has taken over a plant at Dundas, Ont., and will manufacture a new type of lamp and burner. vacuum power apparatus and lawn mower attachments.

* * *

AUSTIN CO., Cleveland, has been awarded a contract for design and construction of an inspection and storage building for the Buda Co., Harvey, Ill., manufacturer of railroad supplies and internal combustion engines. The building is to be of steel frame construction.

* * *

UNION SPRING & MFG. CO., New Kensington, Pa., producer of steel castings, journal boxes and springs, proposes to increase its common stock, from 10,000 shares of $100 par value, to 10,500 shares of preferred stock and 50,000 shares of common stock, both of no par value. Stockholders will meet July 10 to take action on this proposal.

* * *

AUSTIN MACHINERY CORP. OF MICHIGAN and the West Michigan Steel Foundry Co., both of Muskegon, Mich., are being merged. Each will operate as a separate division of the merged company and each plant will be enlarged. Austin Machinery Corp. manufactures trench excavating and backfilling machinery cranes and similar devices. West Michigan Steel Foundry Co. produces electric steel castings.

* * *

MUELLER ENGINEERING WORKS INC., Racine, Wis., formed to take over the hydraulic jack and automotive equipment manufacturing business of J. J. Mueller and associates, has leased about 10,000 square feet in the former Sattley carriage works group in Racine and will greatly enlarge its capacity. The new corporation is capitalized at $25,000 preferred and 6000 common shares without par value. J. J. Mueller and Samuel O. Shelstad continue the principal owners.

* * *

FAFNIR BEARING CO., New Britain, Conn., has purchased the Railway Motors Corp., De Pere, Wis., thereby entering the railway equipment field, according to an announcement by Maurice Stanley, president of the Fafnir company. The railway roller journal bearing which has been manufactured by the Wisconsin corporation will be made under the new arrangement as the Fafnir-Melcher roller journal bearing. The company plans to continue manufacture of the product at the De Pere plant, with production to be ultimately concentrated at New Britain. L. W. Melcher, designer of the bearing, will continue

in charge of sales and service at Chicago.

* * *

GENERAL FIREPROOFING CO., Youngstown, O., George C. Brainard president, will build a plant for the manufacture of aluminum chairs.

* * *

SERVICE TOOL, DIE & MFG. CO., 2256 West Walnut street, Chicago, is building a plant at 4627 West Fulton street to contain 15,000 square feet.

* * *

GESTETNER LTD, London, Eng., manufacturer of office duplicating devices, has bought a plant at Bloomfield, N. J., and will establish the manufacture of its products for distribution in this country

* * *

A. M. BYERS CO., Pittsburgh, has awarded a contract for the design and construction of two special open-hearth, tilting, slag melting furnaces for its new plant at Ambridge, Pa., to S. R. Smythe Co., Pittsburgh.

* * *

CRUCIBLE STEEL CO. OF AMERICA, H. S. Wilkinson chairman, plans to declare a stock dividend during the present year, in keeping with earnings and condition of the company. Cash dividend at the rate of 5 per cent is continued.

* * *

JONES & LAUGHLIN STEEL CORP., Pittsburgh, has purchased the warehouse and business of Roehm & Davison, Beaufait street and Mack avenue, Detroit. The warehouse will be operated by the same organization and personnel as in the past.

* * *

JACOBS & GILE, steel plate and sheet metal jobbers, Portland, Oreg., are building a warehouse at Grand avenue, Stephens and Harrison streets, 90 x 200 feet, served by two 2-ton cranes. A. D. Gile is manager

* * *

KOPPERS CO., Pittsburgh, has been awarded a contract by the Jones & Laughlin Steel Corp. for construction of 81 additional coke ovens at its Aliquippa works. The company already has 122 by-product ovens at this plant. The new ovens will produce 600,000 tons of coke annually.

* * *

BRIGGS & STRATTON CO., Milwaukee, manufacturer of automobile switches and other metal specialties, has received an order from the McKinney Hardware Co., Pittsburgh, for a new type cylindrical padlock. The lock represents a new idea developed by the company's research laboratory, and embodies several new features. Tooling of the Milwaukee plant for a production of the device at the rate of 1500 dozen each week is being completed and maximum production will be reached by July 1.

* * *

ROBBINS ENGINEERING CO., 1747 Abbott street, Detroit, has been established by Omer E. Robbins to specialize in designing and building tools, dies, jigs, fixtures, special machinery and experimental work. The new plant of the company is in operation.

* * *

BLAIR STRIP STEEL CO., New Castle, Pa., has awarded a contract for a building 110 x 125 feet to house a new cold rolling mill, shears and slitters and additional annealing equipment. Work will be started immediately. A new office building will be erected in August.

* * *

GULF STATES STEEL CO. has placed a contract with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for electrical equipment for its 40-inch reversing blooming mill at Alabama City, Ala. The reversing motor is rated at 7000 horsepower, taking power from a flywheel motor generator.

* * *

MIDLAND STEEL PRODUCTS CO., Cleveland, has voted an appropriation of $175,000 for plant rearrangement and additions at the Cleveland works. Improvements will include an automatic paint machine, increase in frame handling facilities, doubling car loading space, and enlarging receiving and warehousing capacity.

* * *

RILEY STOKER CORP., Worcester, Mass., announces it has acquired an interest in the La Mont Corp., New York, which owns patents covering a new method of steam generation. Headquarters of the La Mont Corp. have been moved to Worcester. Riley Stoker Corp. also has plants at Detroit, Decatur, Ill., and Toronto, Ont.

* * *

PHOENIX HORSESHOE CO. has abandoned its plant at Poughkeepsie, N. Y., because of outlay necessary to fit it for further use. The plant was closed May 1 for the annual summer shutdown and decision not to reopen has been made since then. The company has plants at Joliet, Ill., Catasauqua, Pa., and Montreal, Que. The Poughkeepsie plant has been in operation for 45 years.

* * *

PENNSYLVANIA ENGINEERING WORKS, New Castle, Pa., has taken a contract from the Carnegie Steel Co., Mingo Junction works, for design and construction of a 1500-ton hot metal mixer. This is one of the largest mixers ever constructed and will be the third installation for this company, two of similar size having been installed at the Ohio works of the Carnegie company.

* * *

NEW HAVEN SAND BLAST CO., western division, Cleveland, has taken over the interests of L. B. Brewster and H. C. Nicholas, Brewster-Nicholas Co., Cleveland, and the latter have become part of the personnel. Both have had much experience in cleaning room equipment. Personnel of the western division of the New Haven Sand Blast Co. consists of S. S. Parsons, western manager; Laurence Thompson, sales manager, Robert Wisely, sales engineer in charge of the Chicago district; L. B. Brewster, sales engineer in charge of Ohio, western New York, and western Pennsylvania, and H. C. Nicholas, sales engineer in charge of Michigan and western Ohio. A new service department has been organized in Cleveland to maintain spare parts and supply service for western users.

* * *

KRUPP NIROSTA CO. INC., H. G. Batcheller president, has granted two additional licenses for the production of Krupp Nirosta steel in the United States. The licenses are to Henry Disston & Sons Inc., Philadelphia, and Wallingford Steel Co., Wallingford, Conn. Each has been licensed to roll Nirosta steel in strip form. The Krupp Nirosta Co. Inc. recently acquired the Johnson patents from the Crucible Steel Co. of America and has included in contracts with its licensees the right to manufacture under these patents the alloy known as Resistal. American steel companies already operating under Krupp patents include Central Alloy Steel Corp., Massillon, O.; Firth-Sterling Steel Co., McKeesport, Pa.; Ludlum Steel Co., Watervliet, N. Y.; Crucible Steel Co., Pittsburgh; Babcock & Wilcox Tube Co., Beaver Falls, Pa.; Lukens Steel Co., Coatesville, Pa.; and Spang, Chalfant & Co., Pittsburgh. These companies manufacture or process chrome nickel steel by the Krupp process, producing a corrosion resistant steel retaining strength at high temperature and can be welded, drawn, spun, wire drawn formed and polished to a mirror surface.

Southbridge, Mass., is to have a new foundry. Thomas Campbell and George Barr of Milford have leased the historic blacksmith shop at Westville and will soon begin production of bronze and aluminum castings.

Steel Entente Increases Output

Million Tons Added to Annual Aggregate, Beginning With Third Quarter—Total Now 32,287,000 Metric Tons—Continue Organization—6000 Tons of British Pig Iron Shipped to United States in May

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, June 25.—(*By Radio*)—Members of the European steel entente have decided unanimously to continue their arrangement, subject to readjustments. They have increased the aggregate tonnage for third quarter at the rate of 1,000,000 metric tons per year, to an annual production basis of 32,287,000 metric tons. This action reflects the general tendency to increase output. German producers have been protesting against restrictions placed on them, and while quotas apparently have not been changed, the Germans benefit by a large share of the general increase.

Exports of British pig iron are gaining, 6000 tons having been shipped to the United States in May. Scarcity at Middlesbrough has improved demand at Midland furnaces. Hematite is steady. Railmakers in the Barrow district have increased prices 5 shillings ($1.20) per ton. The Birmingham steel market is strong. Consumers in South Wales continue to buy continental semifinished steel, although British steel exports generally are more active.

A report from Paris states French steelworks are well booked, but new orders are diminishing. The comptoirs have maintained prices at unchanged levels. Belgian markets are fair. Berlin reports exports more active, especially to South America and Scandinavia. Domestic trade is quiet.

British Steel Need Brings Larger Production

BIRMINGHAM, Eng., June 14.—Shortage of pig iron is still severe in the Middlesbrough district and it is reported that consumers there are coming to their near neighbors in Northamptonshire to eke out supplies. The only obstacles to relighting furnaces is the question of coke supplies and ironstone and steps are being taken to increase the output of coke. Plenty of coal is available for coking purposes, for the household coal trade is at a standstill owing to the usual seasonal influences.

Sterling $4.85

While constructional engineers in the Midlands still complain of a lack of orders it is known that thousands of tons of building steel are being used in the south of England. Billet makers are in a strong position and able to obtain premiums over the basis price of £6 12s 6d ($32.12) for English and Welsh makers still quote £6 10s ($31.52). Another reason for the prosperity of English steelworks is the high level of Continental steel. Birmingham merchants contend that it costs about £6 7s 6d ($30.91) to import 2-inch billets into Birmingham and it is therefore difficult to sell in view of the narrow margin in its favor.

The experiments in steel sleepers for British railway companies are leading to contracts and the London Midland & Scottish has placed 10,500 sleepers and the North Eastern railway 6000 with United Steel Companies Ltd., Sheffield.

The new rates for pig iron in the

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 24	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON	£ s d		£ s d		£ s d		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$17.58	3 12 6*	$17.46	3 12 0	$17.46	3 12 0	$17.46	3 12 0
Basic	16.61	3 8 6	17.10	3 10 6	17.10	3 10 6	16.73	3 9 0
Basic-bessemer	17.58	3 12 6†	17.10	3 10 6	17.10	3 10 6	16.73	3 9 0
Hematite, Phosphorus 0.02-0.05	17.95	3 14 0	23.66	605*	.....	.....	17.70	3 13 0
SEMIFINISHED STEEL								
Billets	$32.13	6 12 6	$26.19	5 8 0	$26.19	5 8 0	$26.19	5 8 0
Wire rods	41.83	8 12 6	30.92	6 7 6	30.92	6 7 6	30.92	6 7 6
FINISHED STEEL								
Standard rails	$37.59	7 15 0	$31.53	6 10 0	$31.53	6 10 0	$31.53	6 10 0
Merchant bars	1.79c	8 5 0	1.31c	5 18 9	1.31c	5 18 9	1.32c	6 0 0
Structural shapes	1.60c	7 7 6	1.15c	5 4 9	1.15c	5 4 9	1.14c	5 4 0
Plates, ship, bridge and tank	1.76c	8 2 6	1.40c	6 7 3	1.40c	6 7 3	1.39c	6 6 0
Sheets, black, 24 gage	2.17c	10 0 0	2.37c	10 15 0	2.37c	10 15 0	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.96c	13 12 6	3.01c	13 13 9	3.01c	13 13 9	3.08c	14 0 0
Bands and strips	2.17c	10 0 0	1.40c	6 7 6	1.40c	6 7 6	1.40c	6 7 6
Plain wire, base	2.06c	9 10 0	1.65c	7 10 0	1.65c	7 10 0	1.71c	7 15 0
Galvanized wire, base	2.93c	13 10 0	2.12c	9 12 6	2.12c	9 12 6	2.15c	9 15 0
Wire nails, base	2.39c	11 0 0	1.76c	8 0 0	1.76c	8 0 0	1.16c	5 5 0
Tin plate, base box 108 pounds	$ 4.49	0 18 6	.....	.....	.....	.....	$ 8.97	1 17 0

*Francs

Domestic Prices at Works or Furnace—Last Reported		Francs		Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$16.98	3 10 0	$18.57	475(2)	$17.24	620	$20.26	85
Basic pig iron	16.61	3 8 6	19.94	510(1)	17.10	615	21.69	91
Furnace coke	3.64	0 15 0	6.26	160	5.84	210	5.13	21.50
Billets	32.13	6 12 6	24.24	620	25.72	925	28.85	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.51c	140
Merchant bars	1.84c	8 10 0	1.36c	755	1.37c	1,055	1.52c	141
Shapes	1.76c	8 2 6	1.26c	700	1.23c	945	1.49c	138
Plates, ship, bridge and tank	1.93c	8 17 6‡	1.54c	855	1.46c	1,120	1.71c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.92c	1,620	2.73c	2,100	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.96c	13 12 6	3.69c	2,050	3.84c	2,950	3.78c	350
Plain wire	2.06c	9 10 0	1.94c	1,075	2.15c	1,650	2.48c	230
Bands and Strips	2.17c	10 0 0	1.51c	840	1.69c	1,300	1.77c	164

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 15s 0d ($3.64) f. o. b. Ferromanganese £21 13s, 0d ($105.00) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($72.75) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Midlands are established and buying has taken place freely during the last week or two. The furnacemen with one exception have pledged themselves to stand by the price agreement scheme for another 12 months. This applies to delivery in the Midland area and rather better prices are being obtained for the north.

While a steady business is being done in the Barrow-in-Furness district makers are not sufficiently confident to relight furnaces and the 12 in blast are not sufficient for the demand. The Continent is taking regular shipments and prices are unchanged with the exception of malleable iron, which has been advanced 5s ($1.21). The most active section of the Middlesbrough steel trade is in semifinished where order books are full and continental competition is being met successfully, the only landing in the Tees last week being 200 tons of steel sheet bars.. East coast hematite is an active market with prices hardening at £3 14s ($17.93) for mixed numbers.

While the leading Staffordshire iron makers recognize no price below £10 ($48.50), there are rumors of buyers concluding bargains at £9 15s ($47.27), but this is probably because makers outside the district are quoting lower prices and Staffordshire mills are loath to part with business for sake of 5s ($1.21) a ton. Belgian No. 3 iron for nut and bolt making is still coming in regularly to the Black Country district at £7 2s 6d ($34.55), delivered. Steel bars cost as much and tube strip £7 10s ($36.37).

There is still no definite indication of revival in tin plate and interest is centered again around negotiations for the formation of a tin producers' association, an idea which has been in the air for many months. This would probably aim at price control and limiting of output and the tin plate makers have decided that in the event of such an association being created it would follow that tin values would appreciate and consequently tin plates. While the volume of business coming to the Welsh tin plate trade is of small dimensions the world consumption shows no slackening and makers still believe that when consumers realize that lower prices are impossible they will be in the market with substantial orders. Business has been offered below 18s 6d ($4.49) but as a rule this is the basis on which sales are made. Both home and export markets are quiet. Galvanized sheets are also decidedly uninteresting although a certain amount of inquiry has developed within the last few days. Prices are unchanged at £13 12s 6d ($66.07) for 24 gage, but if the advance of 5s ($1.21) in sheet bars declared by some Welsh makers this week becomes established a rise in galvanized sheets would inevitably follow.

Set German Export Mark

Berlin, June 10.—(*European Staff Service*)—German exports of iron and steel in April reached the highest figure recorded during recent years. This was a result of reduced domestic business and the abnormal weather prevailing in earlier months which handicapped shipment of tonnages previously purchased. For the first four months of this year exports aggregated 1,726,622 metric tons, which is slightly ahead of the 1,601,410 tons sold abroad during the period January to April, 1928. The following table gives German imports and exports of iron and steel products, in metric tons:

1928	Imports	Exports
Nov.	142,601	410,171
Dec.	182,159	298,890
1929		
Jan.	176,626	419,589
Feb.	111,852	341,312
March	124,555	346,262
April	154,700	619,460
1928		
April	246,411	412,810

The increase in exports during April was spread over practically every product. Semifinished exports increased from 24,715 to 68,157 metric tons, mainly on account of increased shipments to the United Kingdom. Structural shapes advanced from 10,180 to 17,682 tons, and merchant bars from 49,219 to 121,765 tons, owing to increased sales to Holland and the Argentine. Bands advanced from 10,804 to 19,689 tons, owing to increased sales to the United Kingdom, Holland, Egypt, and the United States.

France Makes Less Iron

Paris, June 14.—(*European Staff Service*)—Output of pig iron in France during April was below March. The April output included 671,000 tons of basic bessemer, 101,000 tons of phosphorus foundry, 21,000 tons of semiphosphorus, 34,000 tons of hematite foundry, 24,000 tons of hematite forge pig iron and 20,000 tons of ferroalloys.

The production of steel ingots and castings in April was greater than in March. It included 790,000 tons of ingots and 18,000 tons of steel castings. The steel tonnage was composed of 560,000 tons of basic bessemer 226,000 tons of open hearth, 7000 tons of acid bessemer, 1700 tons of crucible and 13,300 tons of electric steel. Comparisons follow, in metric tons:

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	131	433,940	390,580
1926	155	785,965	702,500
1927	142	774,785	689,610
1928	153	841,415	782,995
1929			
Jan.	157	904,000	842,000
Feb.	157	782,000	743,000
March	156	880,000	804,000
April	158	871,000	808,000

French Mine More Ore

Paris, June 14.—(*European Staff Service*)—The output of iron ore at French mines during March was above that of February. Stocks at the mines March 31 had also increased over those of Feb. 28. The following table gives figures for the first three months of 1929 as compared with the monthly averages of the three preceding years and 1913, in metric tons:

Mon. ave.	Production	Stocks at end of month
1913	1,826,500	.....
1926	3,269,033	.....
1927	3,723,200	.....
1928	4,109,780	.....
1929		
January	4,535,282	2,683,084
February	4,001,486	2,803,556
March	4,410,287	2,884,230

French Market Steady, Awaiting General Developments in Europe

Paris, June 14.—(*European Staff Service*)—French businessmen have been watching with interest the recent general elections in Belgium and Great Britain. The result of the Belgian elections is considered satisfactory, but certain misgivings are felt in regard to the comparative success of the socialist party in Great Britain. However, this impression is corrected by the general feeling that the socialist majority is not strong enough to interfere seriously with normal business developments.

It has been announced in France that the government has increased the production tax and the tax on imports of coal, which from 2.50 per cent has been fixed at 3.65 per cent. This tax is paid either by the producer or by the importer. As a consequence it is expected the price of coal will rise, and mention of an increase of 5 francs (19.00c) per ton on coke already has been made. This eventually would react on the iron and steel market, but some time will pass before further material increases in iron and steel prices occurs.

There is no change in pig iron. Owing to heavy consumption by steelworks, stocks of pig iron are considerably depleted, but current requirements of consumers still can be met. Demand for semifinished steel has slackened and there is no difficulty for the comptoir to place orders. The price of merchant bars and small shapes is stable, due to maintenance of stable prices by the semifinished steel comptoir, and to fear experienced by makers that they may soon have to pay more for fuel, and that welfare charges also may increase.

Franc—3.91c

Orders for merchant steel are less numerous and delivery is becoming less extended. Merchant bars range from 750 to 760 francs ($29.20 to $29.55) f.o.t. works in the east, and from 760 to 770 francs ($29.55 to $29.95) in the north. The plate and sheet market is firm, and the finer sizes are hardening. Heavy plates are quoted at 790 to 800 francs ($30.80 to $31.05) in the east, medium sizes from 850 francs ($33) and the finer sizes from 1180 francs ($36).

Activities of wire products have slightly subsided. This is explained by the fear of unsatisfactory crops. A few strikes have occurred, which are traced to communist agitation.

CONSTRUCTION *and* ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

STAMFORD, CONN.—Butchart-Nicholls Co., Glenbrook, Conn., manufacturer of golf clubs, has purchased the former property of the British American Mfg. Co., here. The company plans to make extensive improvements to the property.

BALTIMORE—Maryland Meter Works, 309 East Saratoga street, has awarded a contract to the North-Eastern Construction Co., Lexington building, for a plant addition. (Noted June 6.)

BALTIMORE—Procter & Gamble Co., Gwynne building, Cincinnati, has awarded contract for plant buildings, including a power house, to Frainie Bros. & Haigley, 19 West Franklin street, Baltimore.

FITCHBURG, MASS.—Fitchburg Gas & Electric Co., 655 Main street, has plans for a 1-story garage and repair shop. C. H. Tenney Co., 200 Devonshire street, Boston, is architect.

SPRINGFIELD, MASS.—Moore Drop Forging Co., 38 Walter street, plans rebuilding a 2-story press room section. McClintic & Craig, 458 Bridge street, are the architects.

WORCESTER, MASS.—Heald Machine Co. has started construction of plant addition, 105 x 360 feet, adding 35 per cent to floor space of plant. E. J. Cross has the contract. Estimated cost $95,000.

WORCESTER, MASS.—Norton Co., manufacturer of abrasives, announces plans for 5-story plant addition, 124 feet long tapering to 80 feet at the rear. Estimated cost is $110,000. Frost, Chamberlain & Edwards are the architects. E. J. Cross is the builder.

BLOOMFIELD, N. J.—D. Gestetner Ltd., London, England, manufacturer of office duplicating devices, has purchased a plant building here. Frank Grad, architect, 1023 Broad street, Newark, N. J., has plans for improvements.

NEWARK, N. J.—Star Electric Motor Co., Miller street, manufacturer of motors, dynamos, etc., is said to have purchased a 3½-acre tract on Riverside avenue and awarded contracts for a manufacturing plant.

NEWARK, N. J.—Precision Products Inc., care H. Steiner, 20 Bradford place, recently incorporated to manufacture metal stampings, radio parts, tools, etc., Jerome Meier, advises it is purchasing some equipment. (Noted June 13.)

NEW BRUNSWICK, N. J.—Rhodia Chemical Co., manufacturer of pharmaceutical materials and chemicals, has been acquired by the Newport Chemical Works Inc., a subsidiary according to A. A. Schlesinger, president of the Newport Co., 187 Greenfield avenue, Milwaukee. About $1,000,000 will be spent for improvements and additions.

PLAINFIELD, N. J.—National Aircraft Corp., care McDonough & McDonough, recently incorporated, advises it will manufacture a light type plane and will build a plant and purchase equipment for it after preliminary work is completed. (Noted June 20.)

BROOKLYN, N. Y.—Waterfront Service Corp., Twentieth street, has started construction of a warehouse, shipping and lumber terminal on an 18-acre tract on Gowanus Bay, to cost about $7,000,000. Gantry cranes will be used.

POUGHKEEPSIE, N. Y.—DeLaval Separator Co., Pine street, has awarded contract for a foundry addition to L. H. Swenson, 39 Market street.

SCHENECTADY, N. Y.—Capitol District Laundries of New York, subsidiary of Associated Laundries of America Inc., has awarded contract to the Austin Co., 16112 Euclid avenue, Cleveland, for a 1-story plant building, 100 x 150 feet. A power plant and engine room are included.

OLYPHANT, PA.—Board of agents rejected bids for two boilers for the borough power plant. Bids will probably be readvertised.

PHILADELPHIA—Philadelphia Electric Co., 1000 Chestnut street, has been issued a permit to construct a substation at Thirty-eighth and Cuthbert streets. John T. Windrim, Commonwealth building, is architect.

SCHUYLKILL HAVEN, PA.—Electric light department, care J. Moyer, Borough building, is having plans prepared for an addition to the electric light plant. A. C. Wood, Stock Exchange building, Philadelphia, is engineer.

STATE COLLEGE, PA.—Penn State college will start a building program this summer involving an appropriation of $2,500,000. Plans include a power house and additional buildings for the mining, metallurgical and ceramic engineering departments.

East Central

CHICAGO—Standard Stamping & Perforating Co., 4718 West Fifth avenue, has plans for the construction of a 1-story plant addition, 90 x 143 feet, costing about $20,000.

CHICAGO—Robinson Refrigerator Works, 2326 South Western avenue, plans to build a plant on Pershing road, west of Kedzie avenue, Chicago.

CHICAGO—Cragin Tool Co., 5720 Armitage avenue, recently incorporated to manufacture a general line of mechanics tools, etc., advises it has purchased equipment, but will buy other units later. It is renting space for the present.

CHICAGO—Pyle National Co., 1338 North Kastner street, manufacturer of electric headlights, has awarded contract for a plant addition, 91 x 100 feet, to S. N. Nielsen Co., 3059 Augusta street, Chicago.

CHICAGO—Service Tool, Die & Mfg. Co., 2256 West Walnut street, has awarded contract for a plant addition, 100 x 110 feet, to the Regan Construction Co., 228 North LaSalle street, Chicago.

MOLINE, ILL.—Deere & Mansur Co., Fourth street and Third avenue, will construct an addition to its foundry.

AKRON, IND.—Akron Foundry Co., recently incorporated, plans construction of a building, 60 x 100 feet. Work will be started soon. (Noted June 20.)

KOKOMO, IND.—J. Dietzen has awarded contract for a garage and machine shop, 40 x 150 feet, on North Washington street.

MARION, IND.—Board of public works has plans for a water softener and iron removal plant. The cost will be approximately $56,000.

SOUTH BEND, IND.—Oliver Farm Equipment Co., which recently consolidated several farm implement manufacturing companies, is said to have plans for plant expansions totaling about $1,000,000. (Noted April 25.)

(*Concluded on Page* 1765)

Machinery

June Sales Approach Those of May—Western Railroads Placing Many Sizeable Lists—Electrical, Airplane, Radio Industries Active

MACHINE tool activity in the Worcester district continues unabated, overtime schedules being in full force to attempt to meet buyers demands for immediate deliveries. Demand in general is good, although some dealers estimate that June sales will total somewhat less than those of May. The delivery problem in some instances has become acute and one maker of boring machinery refuses to promise delivery before midfall. Implement buying is slow but this gap is being filled by increased purchases being made by Western railroads. Electrical, airplane and radio industries continue to be good buyers. Replacement buying is not active except by textile manufacturers. The outlook for third quarter business is bright. Prices remain firm.

New York, June 25.—Demand for machine tools continues heavy. While in spots there has been some recession in inquiry, new orders are of such volume as to bring about no improvement in delivery. Deliveries still are delayed from 6 to 8 weeks and in the case of boring machinery much longer. One maker of borers is unable to make delivery before midfall. Two pending lists, one for a Baltimore airplane plant expansion, and another for a Texas copper company remain unplaced. About 10 machines, including a radial drill, a large lathe and a turret lathe, are wanted by the latter. Buying is well spread over a wide range and is largely for equipment needed for various expansion programs. Except in the textile field replacement buying is not predominant. Most builders report June holding well up to May. Railroads are not buying many tools, placing only scattered units. New York Central which has bought few tools this year, is in the market for a planer. Electrical, airplane and radio industries are steady buyers. Demand for grinding machinery remains unabated and turret lathes are also in strong demand. The recent slight revision upward in several lines appears to have stopped at that point as new price lists appearing contain only those changes recently announced.

Worcester, Mass., June 25.—No letup has been noticed in the widespread demand for machine tools and the insistance of buyers for immediate shipments is still harassing manufacturers. The outlook for continued production is bright. Grinding machinery is at capacity while overtime schedules still are in operation in many small tool shops in which the seasonal lull has failed to appear. Prices remain firm.

Pittsburgh, June 25.—Machine tool sales continue active for this period, although slightly below the volume of several weeks ago. Pending and prospective work remains large and dealers see considerable business ahead for placement during the third quarter. A number of tools remain to be placed for the new plant of the A. M. Byers Co. A fair number of crane inquiries remain open.

Chicago, June 25.—June sales of machine tools are falling behind May. While the decline is gradual some estimates are that this month's volume may be 10 to 15 per cent below. Inquiries are tapering slightly also, although much business is pending. Activity of the Western railroads is tending to fill the gap of slackened implement and tractor buying. Santa Fe has closed on two radial drills and several shapers; Chicago & North Western has purchased an 18-inch lathe in addition to several lathes purchased within the past 10 days or more, and several roads have additional inquiries before the market. Rock Island is inquiring for two heavy-duty boring mills, a duplex band saw, a high-speed bulldozer, and several other tools. Burlington is asking bids on a 500-pound forging hammer, electric welding machines and several lathe chucks. Inquiries also are in this market from the Gulf Coast lines, International-Great Northern and several other roads. Deliveries are improving slowly, particularly in milling machines and shapers. Shipments of some lines are promised by July 15. Improvement is not due entirely to slackening of orders but results from more plentiful labor supply for the machine tool builders, and better service from foundries on castings. Steel foundries are back on deliveries and consequently steel frame machine tools are farthest behind in deliveries. Implement buying is slow. John Deere Co. has a large list for Waterloo and Charles City, Iowa, and several other implement and tractor makers have programs pending. A. O. Smith Corp., Milwaukee, has an inquiry list of more than a dozen items before the market, some of which are for its addition to its electric pipe-welding shop. Wisconsin territory is showing activity and conditions are encouraging in the Chicago manufacturing district, with tool and die shops leading among the scattered inquiries.

Cleveland, June 25.—Inquiries and sales hold up well with dealers reporting that June sales will top the May total. The sales curve for the year appears to have passed the low point and started upward. A maker of turret lathes states that increased bookings in the last week will put the June total past that of May. No seasonal lull has been noticed in automotive demand by Cleveland dealers. Used machinery is easy for the time. Prices are unchanged.

CRANE ORDERS PLACED

Two 7½-ton gasoline crawler cranes for Boston account to Browning Crane Co.

Two 6-ton motor-driven and two 1-ton hand geared underhung cranes for unstated buyer to H. D. Conkey & Co.

Two 3-ton push cranes for Knowles Foundry & Machine Co., Ottawa, Ill., to H. D. Conkey & Co.

Two 1-ton underhung electric cranes for Miehle Printing Press & Mfg. Co., Chicago, to H. D. Conkey & Co.

Among single orders placed were: 100-ton gantry crane for International Paper Co., Newfoundland plant, to Cleveland Crane & Engineering Co.; 25-ton overhead electric crane for Phoenix Utility Co., to Shepard-Niles Crane & Hoist Co.; 15-ton used crane for Menantico Sand & Gravel Co., Millville, N. J., to Hoisting Machinery Co.; 7½-ton gasoline crawler crane for P. J. Watson, Oceanside, Long Island, N. Y., to Browning Crane Co.; 3-ton post-type jib crane for Appleton Machine Works, Appleton, Wis.; ½-ton wall bracket jib crane for Galloy & Van Etten Co., Chicago; 5-ton electric crane for American Sheet & Tin Plate Co., Gary, Ind.; 3-ton electric crane for Prairie Pipe Line Co., Caney, Kans.; and 1-ton electric crane and 1-ton mast-type jib crane for unstated buyers, all to H. D. Conkey & Co.

Hoist Orders Increase

New York, June 25.—The Electric Hoist Manufacturers' association reports May orders increased 6.496 per cent compared with April and the value of orders increased 8.663 per cent compared with the same month. Shipments of electric hoists in May were 12.972 per cent heavier than in April.

Plan Sheet, Wire Merger

Negotiations for a merger of the Keystone Steel & Wire Co., Peoria, Ill., and the Continental Steel Corp., with plants at Indianapolis, Kokomo, Ind., and Canton, O., are under way, according to D. C. Sommer, vice president and secretary of the Keystone company.

Call Struthers Meeting

Creditors of the Struthers Furnace Co., Struthers, O., adjudged bankrupt April 18, 1927, will meet at 310 Home Savings & Loan building, Youngstown, O., July 10. Liabilities of the company are $3,484,731 and assets $4,700,000.

Value of fuel briquets made in the United States in 1928 was $7,705,617.

Construction and Enterprise

(*Continued from Page* 1763)

DETROIT—Gabriel Steel Co., 2441 Bellevue avenue, has awarded contract to A. A. Albrecht Co., Penobscot building, for a plant addition.

DETROIT—Sky Specialties Corp., 6547 St. Paul avenue, recently incorporated to manufacture engines, parts and airplanes, advises it plans to move into a larger plant.

DETROIT—Wolverine Screw Co., 624 St. Jean avenue, has awarded a contract for a plant addition to W. J. C. Kaufman Co., 10610 Shoemaker avenue, Detroit.

DETROIT—Midland Steel Products, 6660 Mt. Elliott street, plans expanding its plant here which manufactures four-wheel mechanical brakes, according to E. J. Kulas president. Program calls for an expenditure of $500,000.

DETROIT—Electrodor Co., 7629 Fenkell avenue, recently incorporated to manufacture an electric garage door operating device, advises it does not intend to build plant at present. Paul S. Rilett is president.

GRAND RAPIDS, MICH.—Linde Air Products Co., 435 Ionia street, southwest, subsidiary of the Prest-O-Lite Co., New York, has awarded contract for an addition to its plant here, costing about $60,000 to John McNabb & Sons, Murray building, Grand Rapids.

KALAMAZOO, MICH.—Checker Cab Mfg. Corp., North Pitcher street, plans construction of a one and 2-story plant addition. Albert Kahn, Marquette building, Detroit, is architect. Estimated cost about $500,000.

LANSING, MICH.—Wright Model Airplane Corp., 419 East Shiawassee street, recently incorporated to manufacture model airplanes, advises it has a plant and only special woodworking equipment is required. (Noted June 13.)

CINCINNATI—Lewis M. Crosley advises that Powell Crosley Jr., president of the Crosley Radio Corp., Cincinnati, has purchased about 194 acres and plans to build an airplane manufacturing plant and a hangar on the property in the near future. Building details have not been completed.

CLEVELAND—Midland Steel Products Co., Madison avenue and West 106th street, has appropriated $175,000 for plant rearrangement and additions, according to E. J. Kulas, president.

CLEVELAND—Bender Body Co., 6409 Barberton avenue, has awarded contract to the Albert M. Higley Co., 2036 East Twenty-second street, Cleveland, for a 1-story plant addition, 135 x 175 feet.

CLEVELAND—Superior Screw & Bolt Co., East Ninety-third street and Aetna road, has awarded contract to the J. L. Hunting Co., Guarantee Title building, Cleveland, for 1-story addition, 80 x 107 feet. Estimated cost about $40,000.

CLEVELAND—William Koehl, architect, 1720 Euclid avenue, will soon take bids for a 4-story building for the Sisters of the Good Shepherd at Euclid avenue and Chardon road. A power plant will be included in the development. J. J. Wernette, Houseman building, Grand Rapids, Mich., is engineer.

COLUMBUS, O.—City, care Service Director Duffy, awarded general contract for municipal hangar to George H. Moor on his bid of $82,160.

COLUMBUS, O.—Hocking Valley railroad has awarded contract to the Industrial Brownhoist Corp., 4403 St. Clair avenue, Cleveland, for two electrically operated car dumpers for its terminal at Presque Isle, near Toledo, O. The Wellman-Seaver-Morgan Co., 7000 Central avenue, Cleveland, was awarded contract for three 17-ton ore unloaders. (Noted April 25.)

ELYRIA, O.—City will soon take bids for two pumping stations. G. B. Gascoigne, Leader building, Cleveland, is engineer.

NILES, O.—Empire Steel Corp., Mansfield, O., will spend about $250,000 on improvements at its Falcon plant here. A battery of five continuous sheet steel furnaces, a normalizing furnace and other equipment to increase the cold rolling capacity will be installed.

URBANA, O.—City will vote on a municipally owned electric light and power plant at this year's election.

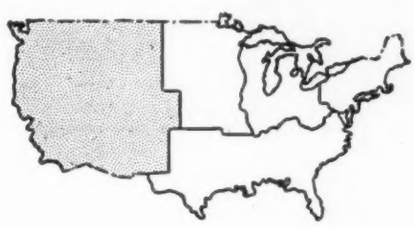
YOUNGSTOWN, O.—McKay Machine Co., Foster and Rayen avenues, manufacturer of machinery for automobile factories and sheet mills, will improve and enlarge its present plant at a cost of about $100,000.

YOUNGSTOWN, O.—General Fireproofing Co., East Dennick avenue, will erect a plant to manufacture aluminum chairs, according to George C. Brainard president. The new plant will adjoin plant No. 1, having about 900,000 square feet of floor space. Estimated cost about $300,000.

NEW CUMBERLAND, W. VA.—Cleveland interests have secured a site here and plan to build a plant for manufacturing steel stampings, according to R. M. Brown, attorney, New Cumberland. Estimated to cost about $75,000.

MANITOWOC, WIS.—Eastman Mfg. Co., 1002 North Eleventh street, maker of hose couplings, has indefinitely postponed construction of a $30,000 plant addition for which plans recently were completed by Architect William J. Raeuber.

MANITOWOC, WIS.—The Manitowoc board of industrial education is taking bids for the construction of a $50,000 addition, 2-story, 46 x 84 feet, to the vocational school, according to plans by Architect William J. Raeuber. A ½-ton freight elevator is specified as part of the equipment. A. L. Nimtz is director of the school. (Noted Feb. 21.)



Western States

PASADENA, CALIF.—Sierra Mfg. Co., 297 North Allen street, manufacturer of septic tanks, recently established, plans to enlarge its present quarters.

VENICE, CALIF.—Bach Aircraft Co. Inc., 353 Third avenue, was recently damaged by fire. Estimated loss about $80,000.

SILVER CITY, N. M.—City, care Ruth Robinson, clerk, has awarded contract for construction of waterworks system to Carl Pleasant Inc., Phoenix, Ariz. (Noted April 18.)

PORTLAND, OREG.—The Austin Co. has the general contract to construct a $50,000 1-story plant, 90 x 200 feet, for Jacobs & Gile, steel plate and sheet metal jobbers. Equipment will include two two-ton cranes.

RANDOLPH, UTAH—City, care Leo McKinnon clerk, has plans for construction of a waterworks system. A bond issue was carried at a recent election.

BREMERTON, WASH.—Bond issues totaling $840,000 were approved at a special election. Of this sum $750,000 is to extend the municipal lighting system and $90,000 for improving the city water system.

ENUMCLAW, WASH.—Coal Carbonizers Inc. plans construction of a plant for carbonization and distillation of coal near here. A cracking plant for coal tar will also be added, according to Phillip R. Fennelly, secretary and treasurer of the Fox-Fennelly Co., Seattle, fiscal agent for the company.

Southern States

BESSEMER, ALA.—Central Foundry Co., Eighth avenue, will start immediate construction of an addition which will add about 3600 square feet of floor space to its main plant.

LOUISVILLE, KY.—Reynolds Metal Co., 2934 Grand avenue, manufacturer of tin foil, is reported to have completed plans for plant addition costing about $60,000 on Hale avenue.

WAYNESBORO, MISS.—Interstate Utilities Co. has purchased the State Line Ice & Light Co. O. D. Fisher, Quitman, Miss., is manager. New machinery will be added to the plant.

ENID, OKLA.—Packard Aircraft Co., recently organized, plans manufacturing first plane in temporary quarters, while awaiting construction of a plant building at the municipal airport here. Capt. Hugh Askew, manager of the airport, is associated with the new company.

COLUMBIA, TENN.—North Alabama Utilities Co., Sheffield, Ala., has plans for construction of a gas plant here. The proposed franchise is before the city council. Estimated cost about $250,000.

KINGSPORT, TENN—Holston River Power Co., subsidiary of the American Cyanamid Co., 535 Fifth avenue, New York, has received permit from the Tennessee Public Utilities commission to develop power projects. The company plans to construct three power plants and dams on the Holston river, near here, at a total expenditure of about $35,000,000.

BEEVILLE, TEX.—Magnolia Gas Co., 201 North St. Marys street, San Antonio, Tex., has purchased an 80-acre tract here and proposes to build a gas booster station. Estimated cost about $100,000.

BORGER, TEX.—Western Carbon Co. subsidiary of Columbian Carbon Co., 45 East Forty-second street, New York, has plans for an addition to its plant here.

GALVESTON, TEX.—Galveston Wharf Co. plans construction of an elevator for handling export grain. Equipment includes 11 scales of 25,000 bushels capacity, three direct type drying units of 1000 bushels capacity, a dust collecting system and clipping machinery.

HOUSTON, TEX.—Pacific Gas Radiator Co., 7541 Roseberry street, Los Angeles, C. O. Menig secretary and treasurer, is reported contemplating establishing a plant here for manufacturing gas heating appliances.

HOUSTON, TEX.—Phillips Petroleum Co., Bartlesville, Okla., will soon start construction of its gasoline refractionating plant on a 50-acre tract on the Houston ship channel. Estimated cost about $500,000.

HOUSTON, TEX.—Geisecke & Harris, architects, Second National Bank building, have drawn plans for a large air terminal, including machine shop facilities. It is reported that construction will be started soon.

CALGARY, ALTA.—Anthes Foundry Co., 64 Jefferson avenue, Toronto, Ont., and Winnipeg, Man., has purchased a site here and propose to start work soon on the erection of a new plant.

CARDSTON, ALTA.—Town council has decided to float a debenture issue of $40,000 to purchase a diesel engine and make other improvements to power plant. Power house work, additional switchboard, voltage regulator and other accessories will be included.

DUNDAS, ONT.—Neu-Flame Ltd., a subsidiary of the British company of the same name, recently incorporated, has acquired the land and buildings here formerly occupied by the Caldwell Canning Co., and will install equipment for the manufacture of a new type patented lamp and burner, vacuum power attachments, lawn mower attachments, etc.

FORT WILLIAM, ONT.—It is reported that the Canadian Terminals Systems Ltd., Winnipeg, Man., proposes to start work at an early date on the erection of a gas and coke plant here.

PORT STANLEY, ONT.—Dominion Gas Co., Hamilton, Ont., has secured an option on a 5-acre site here and proposes to start work soon on the erection of a coke plant to cost $3,000,000.

THOROLD, ONT.—Exolon Co., manufacturer of abrasives, is building a 150-foot extension to its main electric furnace plant and a 70-foot extension to its arc furnace plant.

MONTREAL, QUE.—Simmons Ltd., 400 St. Ambroise street, has awarded contract for a plant addition including a power house to Anglin-Norcross Ltd., 65 Victoria street, Montreal.

West Central

LEWISTON, IDAHO—Idaho Power Co., Seventh and Bannock streets, Boise, Idaho, has plans for construction of a hydroelectric power plant on the Snake river, near here. Estimated cost about $600,000.

PRIEST RIVER, IDAHO—Pacific States Pulp & Paper Co., Aberdeen, Wash., has purchased a site here for C. W. Beardmore on which it is proposed to erect at once a $1,000,000 plant. (Noted Feb. 21.)

DAVENPORT, IOWA—Blackhawk Foundry & Machine Co. will build an addition to house the gray iron molding department, 122 x 164 feet, costing about $60,000. Walter K. Voss is president.

FORT DODGE, IOWA—Sargent Machine Co., manufacturer of excavating machinery, has started construction of a plant addition.

OTTAWA, KANS.—City, care W. O. Meyers city engineer, city hall, is drawing nal plans for a sewage disposal plant. Estimated cost $100,000.

KANSAS CITY, MO.—Air Terminal Corp. plans to build an air-mail terminal at the municipal airport containing approximately 160,000 square feet. Terminal will be operated by the city, according to Judge H. F. McElroy, city manager.

ST. JOSEPH, MO.—Auto Specialties Mfg. Co., Edgewater street, will soon begin work on a 1-story addition costing about $150,000. The larger part of the new unit will be used as a foundry. F. E. Davidson, 53 West Jackson boulevard, Chicago, is architect.

CLAY CENTER, NEBR.—City, care C. L. Stuart clerk, is having plans prepared for an electric light plant. Grant & Fulton, 525 South Thirteenth street, Lincoln, Nebr., are architects.

Recent Incorporations

CHICAGO—Moline Implement Co., 11 South LaSalle street, has been incorporated with 100 shares of no par stock to manufacture and deal in agricultural machinery, by W. C. MacFarlane.

CHICAGO—Cragin Tool Co., 5720 Armitage avenue, has been incorporated with $100,000 capital to manufacture and sell mechanical tools, by Russel Greenacre.

CHICAGO—Andreasen Mfg. Co., 6649 Oliphant avenue, has been incorporated with 400 shares no par stock to manufacture and deal in metals, specialties and machinery, by Harry N. Andreasen.

CHICAGO—Ingersoll Steel & Disc Co., 112 West Adams street, has been incorporated to manufacture and deal in automobile parts and equipment, agricultural and farming implements, by Lester J. Nash. The Corporation Trust Co., 112 West Adams street, is correspondent.

CHICAGO—Austin Welding Works Inc., 514 North LaSalle street, has been incorporated with 100 shares of no par stock to manufacture and deal in tools, metals, etc., by Robert W. Austin.

INDIANAPOLIS—Automatic Screw Products Co. has been incorporated with 1500 shares of no par stock to manufacture and sell screw machine products, stampings and metal parts, by Albert J. Vondersaar, 2021 Hoyt avenue.

WICHITA, KANS.—Vanos Aircraft Corp. has been incorporated with $250,000 preferred and 10,000 shares of no par stock to manufacture airplane motors. George R. Bassett, manager of the Swallow Airplane Co., is one of the incorporators.

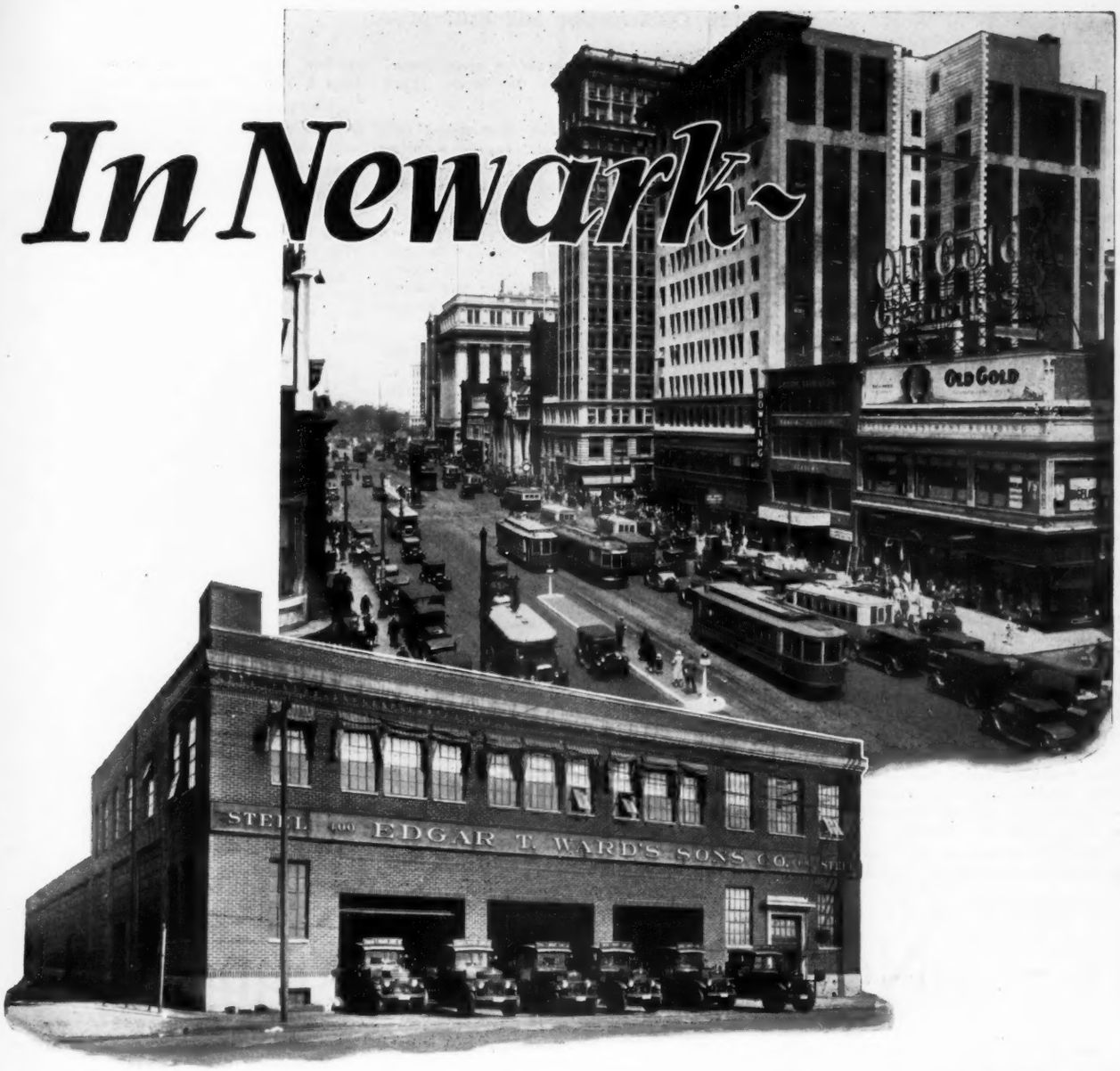
BOSTON—National Illuminating Co. Inc. has been incorporated with $25,000 capital to manufacture and deal in all kinds of electric fixtures, motors and illuminating accessories. John Henry Dolan, 422 Columbia road, Dorchester, Mass., is president.

BOSTON—Jumbo Equipment Co. of New England has been incorporated with 500 shares of no par stock to manufacture and deal in accessories and parts for motor vehicles. Ralph B. Green, 63 Lincoln street, Dedham, Mass., is president.

CAMBRIDGE, MASS.—Hale-Home Movie Products Co. has been incorporated with $50,000 preferred and $50,000 common stock to manufacture motion picture machines. Ernest W.

(*Concluded on Page* 1768)

In Newark~



METROPOLITAN DISTRICT STEEL SERVICE

Mr. Walter S. Ganong, Manager, and the *Ward-House* Staff in Newark have provided outstanding service facilities for this great district.

Telephone Terrace 3300.

EDGAR T. WARD'S SONS CO.

(Division of COLUMBIA STEEL & SHAFTING CO.)

NEWARK WARD-HOUSE — 400 Frelinghuysen Ave.

BOSTON, 44 Farnsworth St.
BUFFALO, 39 River St.
CHICAGO, 1455 W. 37th St.
CLEVELAND, 1210 E. 55th St.
DETROIT, 1300 Fort St., West
NEW YORK, 373 Pearl St.
MILWAUKEE, 57 Ave. and Burnham St.
PHILADELPHIA, Cedar and Westmoreland Streets.

The World's Largest Distributors of Fine Steel Products

Recent Incorporations

(*Concluded from Page* 1766)

Helley, 854 Massachusetts avenue, Cambridge is president.

SPRINGFIELD, MASS.—Royson Mfg. Co. has been incorporated with 300 shares no par stock to manufacture machinery and tools. William V. Baldwin, 31 Elm street, Springfield, is president.

CONSTANTINE, MICH.—Pierce Merritt Casket Co. has been incorporated with $50,000 capital to manufacture caskets, washing machines and novelties, by Rex C. Merritt.

DETROIT—Robbins Engineering Co., 1747 Abott street, has been incorporated with $15,000 capital to manufacture and deal in machines and tools, by Omer E. Robbins.

DETROIT—Sky Specialties Corp., 6547 St. Paul avenue, has been incorporated with 200,000 shares of no par stock to manufacture and deal in airplanes, parts, engines and equipment, by Charles B. Bohn.

DETROIT—Heywood Starter Corp., 6547 St. Paul avenue, has been incorporated with ten shares of no par stock to manufacture airplane and gas engine starters, by Simon D. DenUyl.

DETROIT—Electro-Master Co., 1801 East Atwater street, has been incorporated with 50,000 shares of no par stock to manufacture and deal in clocks, time switches and electrical devices, by Warren Noble.

DETROIT—Cadillac Tool Products Co. Inc., 2016 Franklin street, has been incorporated with $25,000 capital to engage in business of special and general machinery, tools, dies, etc., by David L. Laurents.

DETROIT—Woodsteel Box Corp. has been incorporated with $50,000 capital to manufacture and deal in all kinds of metal boxes, baskets, etc., by Walter O. Brown, Ford building, Detroit.

DETROIT—Tyler-Chapman Engineering Co., Holcomb and Mack streets, has been incorporated with $25,000 capital to manufacture and deal in machines, devices and equipment, by Tracy B. Tyler.

DETROIT—Hoffman Combustion Engineering Co., 4484 Cass avenue, has been incorporated with $100,000 capital and 50,000 shares of no par stock to manufacture and install stokers and combustion systems, by Jerome A. Hoffman.

KALAMAZOO, MICH.—Ramisch Tool & Die Co. has been incorporated with 2500 shares of no par stock to engage in general manufacturing.

SAGINAW, MICH.—Tonks Mfg. Co., 300 Hoyt street, has been incorporated with $50,000 capital to manufacture and deal in jointers, feeders and planers, by Thomas Tonks.

HANOVER, N. J.—Aircrafters Inc. has been incorporated with 2500 shares of common stock to manufacture airplanes, by Lindabury, Steelman, Zink & Lafferty, 24 Commerce street, Newark, N. J.

JERSEY CITY, N. J.—Standard Sprayer Inc. has been incorporated with $10,000 capital to manufacture metal containers, by the Corporation Trust Co., 15 Exchange place, Jersey City.

JERSEY CITY, N. J.—Collins Gear & Motor Co. has been incorporated with 200 shares common stock, by the Corporation Trust Co., 15 Exchange place, Jersey City.

NEWARK, N. J.—Arror Engineering Co. has been incorporated with $25,000 capital to engage in toolmaking, by Congleton, Stallman & Hoover, 810 Broad street, Newark.

NEW YORK—Hercules Metal Products Corp. has been incorporated with $30,000 capital, by Slade & Slade, 291 Broadway, New York.

NEW YORK—Rim & Wheel Corp. of America has been incorporated with 200 shares of common stock, by J. E. Ankus, 49 West Seventy-seventh street, New York.

NEW YORK—G. F. Machine Mfg. Corp. has been incorporated with 200 shares of common stock, by L. Day, 32 Park avenue, New York.

READING, PA.—Empire Steel Castings Inc. has been incorporated with $5000 capital, by J. E. Horton, 146 North Eleventh street, Reading.

KILMARNOCK, VA.—Kilmarnock Mfg. Co. has been incorporated with $50,000 capital to manufacture and sell septic tanks and engage in sheet metal work, by A. W. Wagenseller.

GRAVENHURST, ONT.—Ditchburn Boats Ltd. has been incorporated to manufacture and deal in launches, ships, boats, canoes, etc., with $200,000 capital and 50,000 shares of no par stock by Gladys Wright, Helen Paterson and Frederick A. Beck, all of Toronto.

HAGERSVILLE, ONT.—Hagelin Engineering & Construction Co. Ltd. has been incorporated, with $100,000 capital by William R. West, Howard A. Harrison and William J. Beattie, all of Toronto.

KITCHENER, ONT.—Philip Gies Foundry Ltd. has been incorporated to carry on a general foundry business, with $200,000 capital by Philip Gies, William Pope Clements and Gerald E. Eastman, all of Kitchener.

REGINA, SASK.—John Kenward Construction Co. Ltd. has been incorporated to carry on the business of a general contractor, with $100,000 capital and 2000 shares no par value, by John Kenward, Francis T. Clarke, Malcolm A. Carmichael and others, all of Regina.

New Trade Publications

ABRASIVES—Behr-Manning Corp., Troy, N. Y., has issued a price book on its coated abrasives, useful to those using such materials.

SWITCHES—Allen-Bradley Co., Milwaukee, is circulating a folder on the across-the-line switch that it manufactures. Some of its uses are illustrated.

SHOCK ABSORBER—Thompson Electric Co., Cleveland, has issued a bulletin illustrating recent changes in its shock absorber for use on electric lamps to minimize breakage.

REFRACTORIES — Corundite Refractories Inc., Massillon, O., has issued a bulletin on refractories, including standard forms and specialties. The bulletin in effect is a catalog of the company's products. Illustrations and tables of data are given.

MOTOR STARTER—Electric Controller & Mfg. Co., Cleveland, suggests elimination of the human element in starting motors, in a current bulletin. Automatic application of power starts the motor, brings it to speed better than human hands could do. The bulletin is illustrated.

METAL SPRAYS—Metals Coating Co. of America, Philadelphia, in a bulletin illustrates how its devices can be used to build up metals and cause material savings. Suggested uses are to fill surface defects in castings, to build up undersize metal parts, to apply decorative metal coatings, protection from corrosion and for special applications.

TRAMRAILS—Cleveland Electric Tramrail division of Cleveland Crane & Engineering Co., Wickliffe, O., illustrates in a current bulletin methods of handling flasks, patterns, cores and molds by means of its conveying devices, eliminating much hand labor.

EXPLOSIVE STORAGE—E. I. du Pont de Nemours & Co. Inc., Wilmington, Del., in its current service bulletin treats of the storage of explosives and blasting accessories in underground iron ore mines. It is a paper by two representatives of the company, written after research among Lake Superior mines.

BOILER ARCHES—Standard Arch Co., Frostburg, Md., is distributing a booklet describing its system of suspended roof construction and sectionally supported side walls for boilers, kilns, industrial furnaces, coal, gas or oil-fired. It is illustrated to show method of construction.

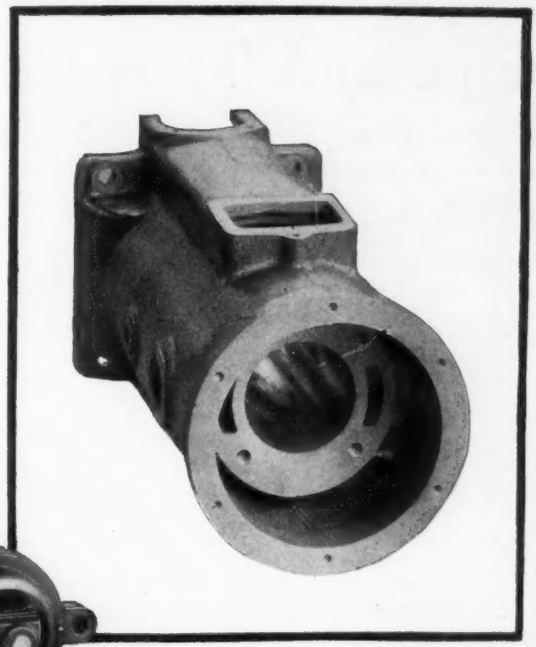
POWER TRANSMISSION — Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued two publications on power transmission equipment. One is on single-reduction mill units, illustrating and describing helical and herringbone gear units for heavy duty drives. A chart is presented containing curves from which may be determined the size and weight of flywheels for use with these mills. The other bulletin is on flexible couplings designed for use with speed reducers.

ELECTRICAL DEVICES—General Electric Co., Schenectady, N. Y., has issued the following bulletins: Helicoil sheath-wire immersion heater; travel carriage for automatic arc welder; two-stage reciprocating air compressors; stationary reciprocating air compressor sets, stationary or portable, single or two-stage; arc welder, gas engine driven. They are illustrated

BOILER BAFFLING—Combustion Engineering Corp., New York, is distributing a number of its house organ containing a presentation of baffling for straight tube boilers. It illustrates and describes various types of baffles, their relation to straight tube boilers, materials used and comparative tests and types of baffle arrangement to meet various requirements.

FLOORS—Master Builders Co., 7016 Euclid avenue, Cleveland, has issued a series of folders on its surfacing material for floors. Illustrations show the effect of the hardeners on cement floors. The booklets also contain illustrations from photographs of typical installations and comparisons of cement floors on which the surface hardeners were and were not used. Charts and other data show the effect of the materials.

WORTHINGTON



Nickel Cast Iron cylinder used in Worthington Vertical Feather Valve Compressor mfd. by the Worthington Pump and Machinery Corp. at their Cincinnati, Ohio Works.

Nickel Cast Iron

selected by WORTHINGTON after 32 years' study of compressor materials

THE Worthington vertical feather valve compressor represents the latest development in this type of industrial equipment. It is the result of 32 years' manufacturing experience further augmented by long study of compressor requirements.

Because of its well-known dependable properties Nickel Cast Iron has been chosen for cylinder castings used in Worthington compressors. By adding 1.75% Nickel to a suitable base mixture, pressure-tight castings with a high degree of wear-resistance are readily secured. In addition, Nickel Cast Iron insures a uniformly high hardness along cylinder bores, density in heavy sections and good machinability.

At their Cincinnati Works, Worthington turns out these intricate water-jacketed castings on a production basis. To insure continuous progress of the units through the various production steps, careful standardization on the highest grade materials is necessary. Nickel Cast Iron consistently meets Worthington's exacting requirements for high quality basic materials.

Nickel
FOR CAST IRON

INCO F NICKEL

Our foundry specialists will gladly discuss your casting problems with you.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

Pipe and Tube Prices—Plate Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

To large jobbers these discounts are increased by 1 point and two supplementary discounts of 5 per cent on black, and 1½ points and two supplementary discounts of 5 per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLING

Butt Weld

	Black	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1 to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3¼ to 3¾-inch	56 off
4-inch	59 off
4½ to 6-inch	48 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. On 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	63 off
1¼ and 1½-inch	55 off
1¾-inch	39 off
2 and 2¼-inch	34 off
2½ and 2¾-inch	42 off
3-inch	48 off
3¼ and 3½-inch	50 off
4-inch	53 off
4½, 5 and 6-inch	42 off

SEAMLESS HOT ROLLED

1¾-inch	39 off
2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3¼ and 3½-inch	56 off
4-inch	59 off
4½, 5 and 6-inch	48 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Net prices per foot f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
6½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{5}{16}$-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{5}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds square foot.... .20c
Plates ordered 7.65 pounds square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, classes A-B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)
Additional extra ..... .10c

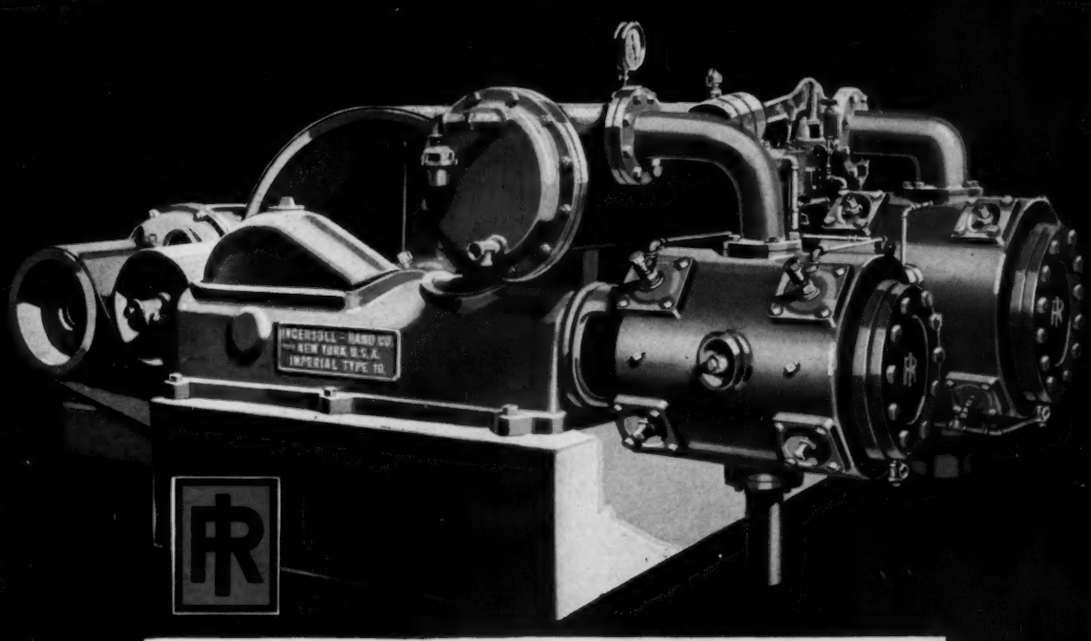
Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)
Additional extra ..... .20c

JUN 27 1929
PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

IRON TRADE REVIEW

CLEVELAND, O. JUNE 27, 1929



Three New Compressors

INGERSOLL-RAND now offers improved designs of its standard medium-size duplex compressors, Types "XRB," "XCB," and "XRE."

Outstanding advantages of these new machines are: Lighter inertia loads and better balance; smoother operation; decreased floor space requirements.

Frames are more rugged and compact. Due to metallurgical advances, moving parts are lighter, but stronger. Bearing surfaces are larger. A new intercooler also serves as an effective moisture trap and its overhead arrangement adds to compactness and reduces foundation requirements.

Types "XRB" and "XCB" are belt-driven. Type "XRE" is direct-connected, synchronous-motor-driven. Either 5-step or 3-step clearance control is available on "XCB" and "XRE" units.

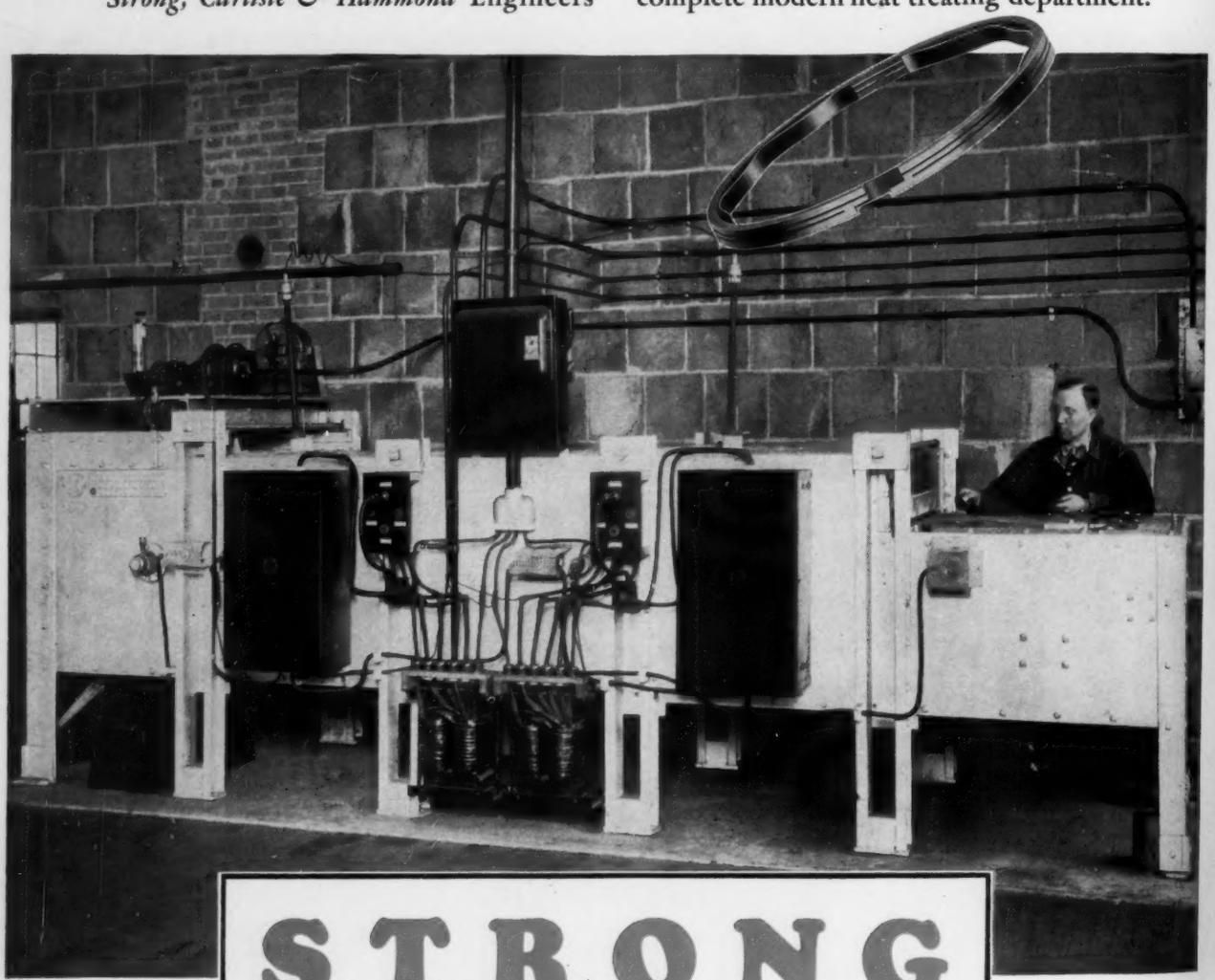
Ingersoll-Rand

11 Broadway, New York City

Used by a piston ring maker

ONE of the largest manufacturers of piston rings depends upon this S C & H continuous electric furnace for the heat treating of the delicate strips of Swedish spring steel from which the expander rings are crimped and formed. Uniformity and reliability of furnace operation must be certain, for the work involves handling of costly material.

Strong, Carlisle & Hammond Engineers have designed, built and installed electric furnaces for many exacting manufacturing plants in the automotive field. They are alert to apply the most modern principles of design and construction proved to be sound practice. Many years experience are at your command when you call in an S C & H Engineer to build an industrial furnace, or to equip a complete modern heat treating department.



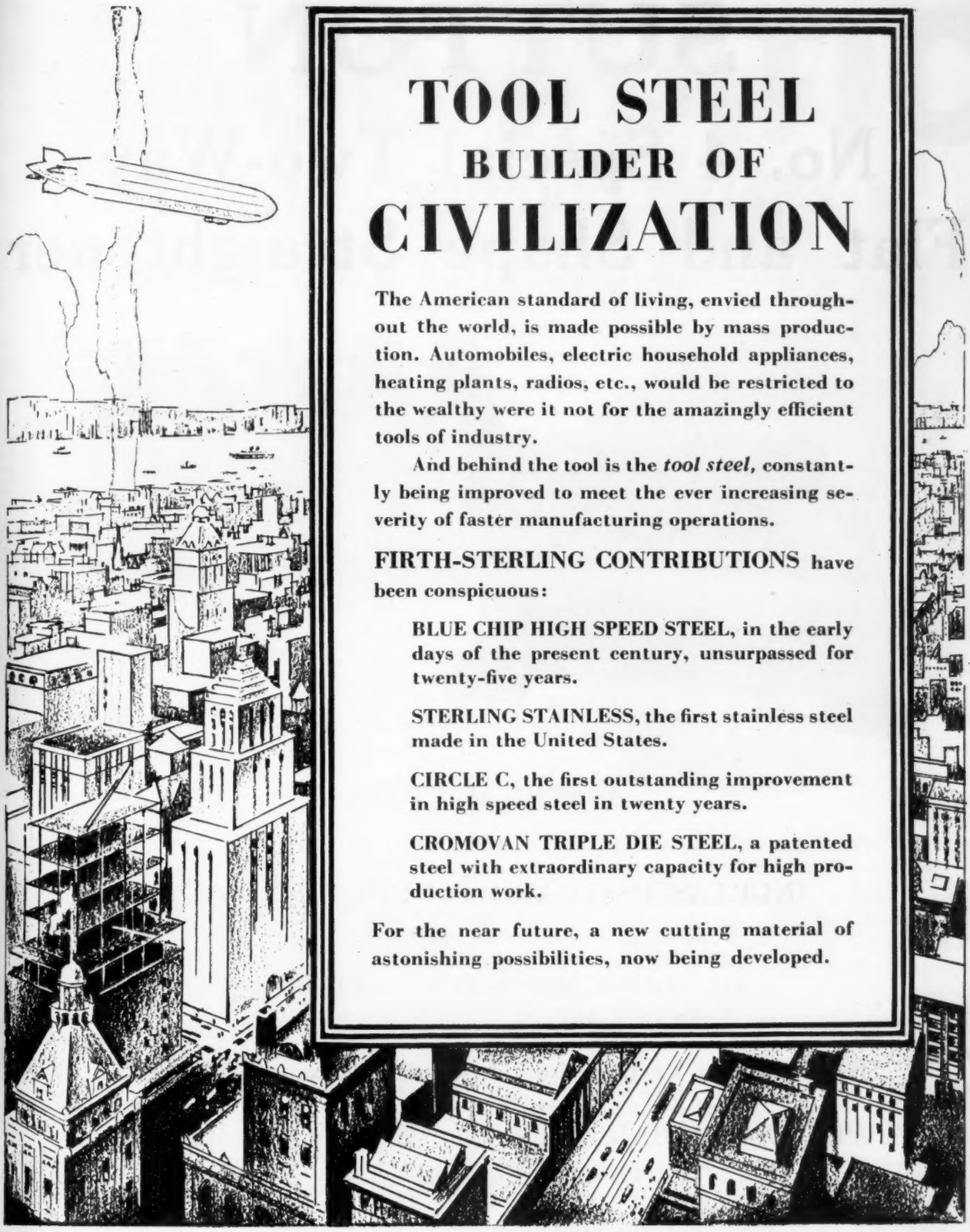
STRONG CARLISLE & HAMMOND

SC&H Furnaces are built in all sizes of Oven, Pot, Continuous, and Special Types for Electric, Oil or Gas application.

SC&H Furnaces are made for annealing, case hardening, carburizing, forging, cyaniding, lead hardening, oil tempering, etc.

INDUSTRIAL FURNACE MANUFACTURERS · CLEVELAND, OHIO

Vol. 84, No. 26, June 27, 1929, issue of IRON TRADE REVIEW, published weekly at Cleveland, Ohio. Entered as second class matter at the post office Cleveland, Ohio, under the act of March 3, 1879. Subscription prices $6.00 a year in U. S.; $8.50 in Canada; foreign £2:0:0; single copies 25c.



TOOL STEEL BUILDER OF CIVILIZATION

The American standard of living, envied throughout the world, is made possible by mass production. Automobiles, electric household appliances, heating plants, radios, etc., would be restricted to the wealthy were it not for the amazingly efficient tools of industry.

And behind the tool is the *tool steel,* constantly being improved to meet the ever increasing severity of faster manufacturing operations.

FIRTH-STERLING CONTRIBUTIONS have been conspicuous:

BLUE CHIP HIGH SPEED STEEL, in the early days of the present century, unsurpassed for twenty-five years.

STERLING STAINLESS, the first stainless steel made in the United States.

CIRCLE C, the first outstanding improvement in high speed steel in twenty years.

CROMOVAN TRIPLE DIE STEEL, a patented steel with extraordinary capacity for high production work.

For the near future, a new cutting material of astonishing possibilities, now being developed.

FIRTH-STERLING STEEL COMPANY

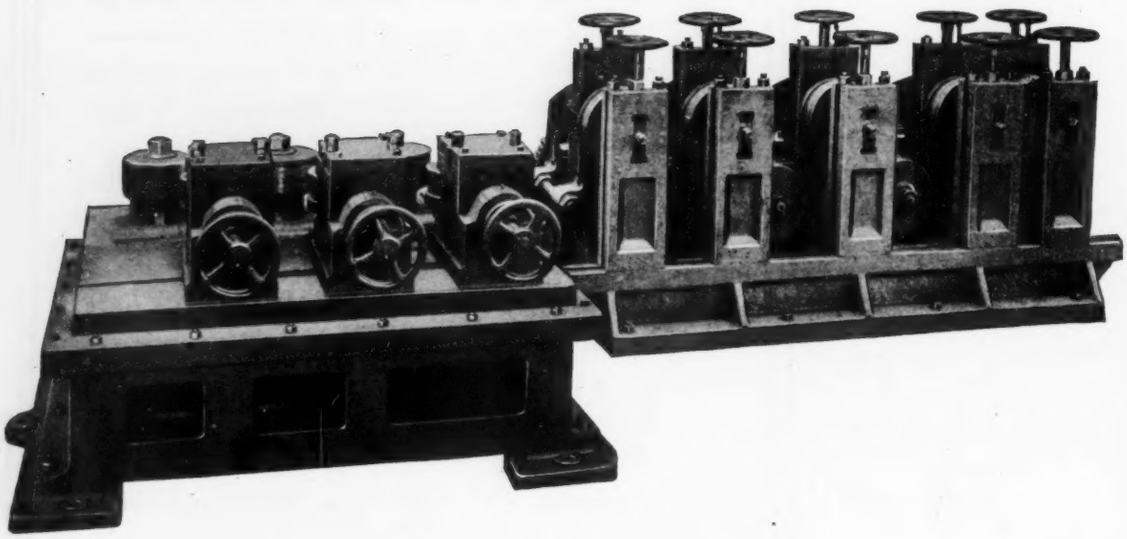
WORKS: McKEESPORT, PA.
GLOBE WIRE DIVISION
SHARPSBURG, PA.
NEW YORK DETROIT
BOSTON CLEVELAND
PHILADELPHIA CHICAGO
HARTFORD LOS ANGELES

Vol. 84, No. 26, June 27, 1929, issue of IRON TRADE REVIEW, published weekly at Cleveland, Ohio. Entered as second class matter at the post office at Cleveland, Ohio, under the act of March 3, 1879. Subscription prices $6.00 a year in U. S.; $8.50 in Canada; foreign £2:0:0; single copies 20c.

SUTTON

No. 4 Special Two-Way Flat and Shape Straightener

PATENTED



A NEW MACHINE

FOR

INCREASED STRAIGHTENING ACCURACY

ON

ALL SHAPES, HOT ROLLED, COLD DRAWN
FERROUS AND NON-FERROUS METALS.

Straightens by Vertical and Horizontal Pressure in one Pass.

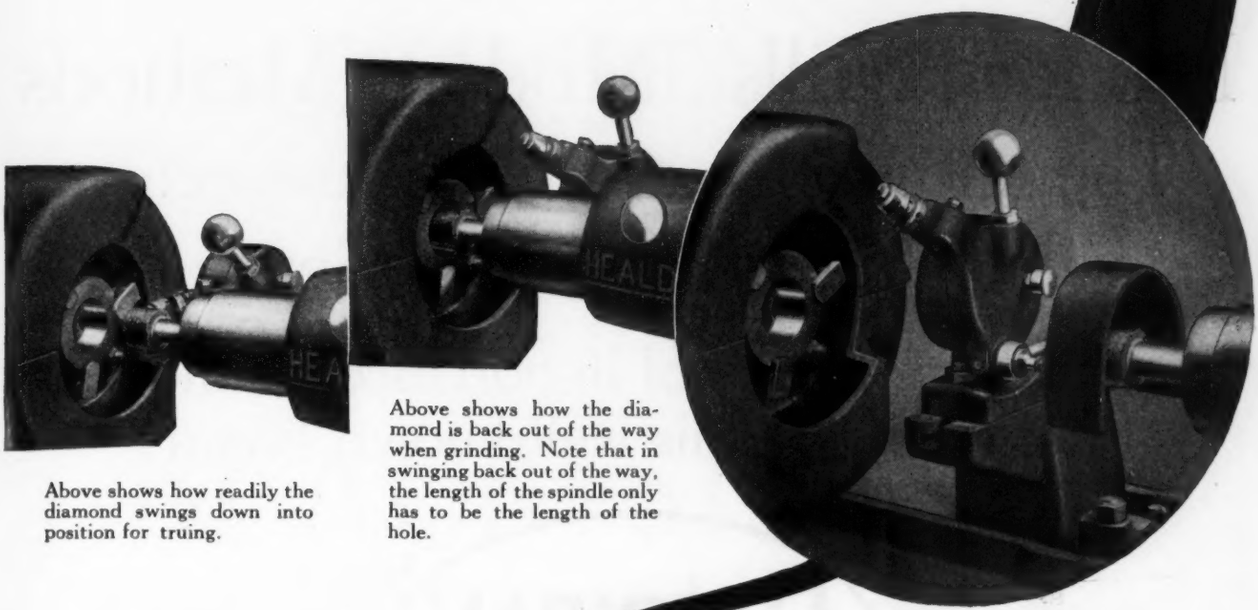
TWIST IN A BAR CAN BE POSITIVELY REMOVED ON THIS MACHINE

Patents Applied For on This Feature.

SUTTON ENGINEERING CO.
PARK BUILDING PITTSBURGH, PA.

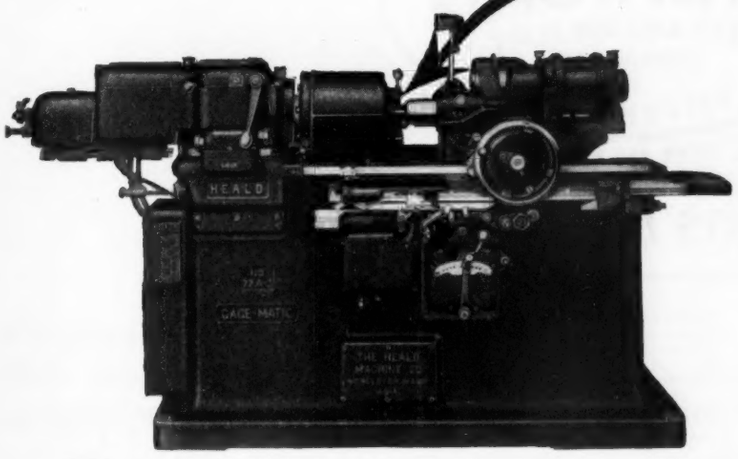
GAGE-MATIC

Swinging Diamond makes possible short stubby spindle



Above shows how readily the diamond swings down into position for truing.

Above shows how the diamond is back out of the way when grinding. Note that in swinging back out of the way, the length of the spindle only has to be the length of the hole.



The swinging wheel truing device illustrated above is exclusively a Heald feature. It is rigidly constructed, swinging on initially loaded ball bearings, positive in action, readily adjusted for position, automatically operated, and hydraulically controlled.

This design makes possible a short, stubby spindle so desirable on all internal grinding and *often determining the difference between a successful job and a failure.*

The Heald Machine Co., Worcester, Mass., U. S. A.

HEALD

AMERICAN SHEETS

Modern Mills—Modern Methods

The knowledge of expert research—
The skill of long experience—

These are factors of importance behind
Sheets bearing this well-known brand:

AMERICAN
SHEET AND TIN PLATE COMPANY
PITTSBURGH
TRADE MARK REG. U.S. PAT. OFF.

STEEL SHEETS *for* Every Purpose

Look for the new AMERICAN brand. This Company's constant endeavor is to further improve the standards of service, excellence and utility for its products. Sold by leading metal merchants.

DISTRICT SALES OFFICES:
Chicago, Denver, Detroit, Cincinnati, New Orleans, New York, Philadelphia, Pittsburgh, and Saint Louis.

—CONTRIBUTOR TO—
SHEET STEEL
TRADE EXTENSION COMMITTEE

American Sheet and Tin Plate Company
General Offices: Frick Building, PITTSBURGH, PA.
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UNITED STATES STEEL CORPORATION

Quality Products — *Dependable Service*

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MINNESOTA STEEL COMPANY
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THERE is no substitute for *quality*. The brands of this Company have a recognized standing wherever sheet metals are used.

KEYSTONE
COPPER STEEL
AMERICAN
SHEET AND TIN PLATE
COMPANY
PITTSBURGH
TRADE MARK REG. U.S. PAT. OFF.

Keystone Quality Gives Maximum Rust-Resistance!

BLACK SHEETS
Galvanized Sheets
Blue Annealed Sheets, Automobile Sheets
Special Sheets, Electrical Sheets
Metallic Furniture Stock, Range Steel
Tin and Terne Plates, Etc.

We combine a splendid organization with extensive facilities to serve consumers with Steel Sheets and Tin Plates which have quality well wrought in—and likewise conscientiously maintained. Write nearest District Office.

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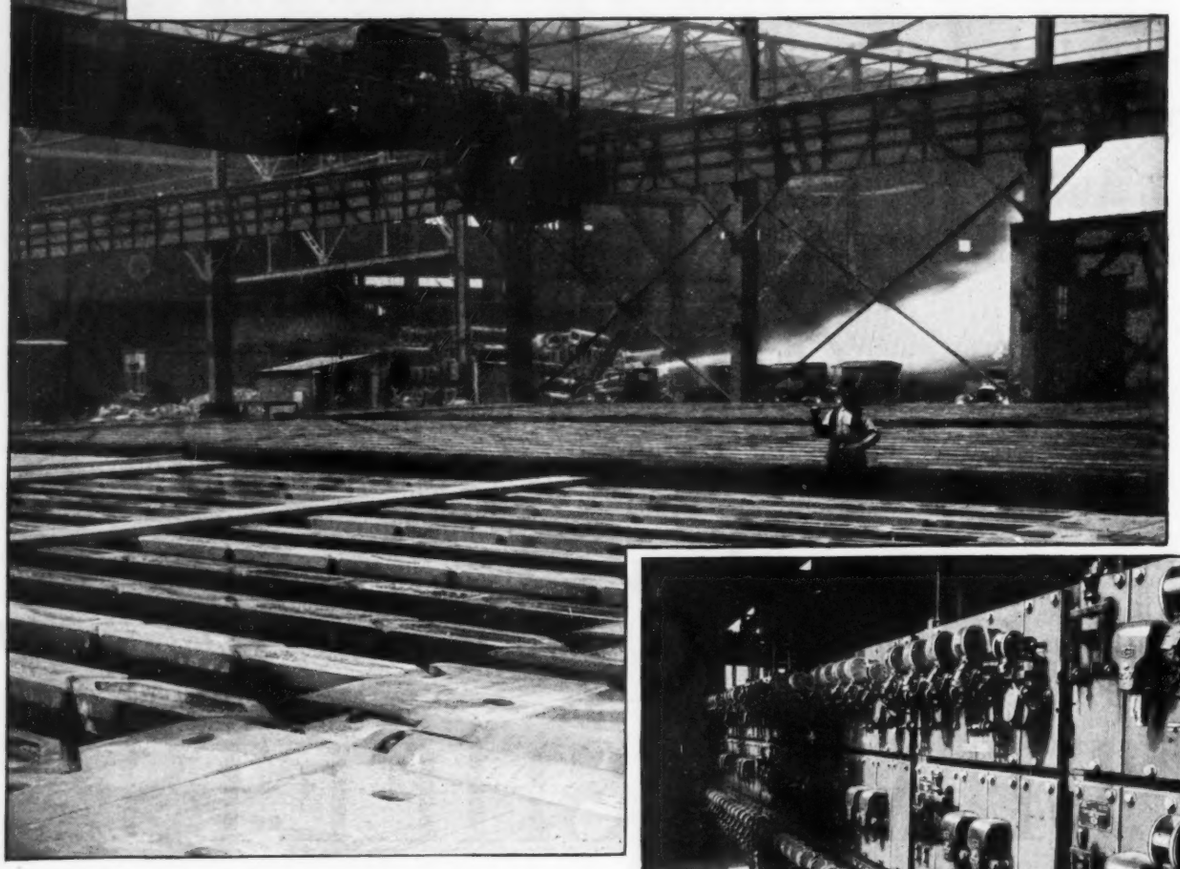
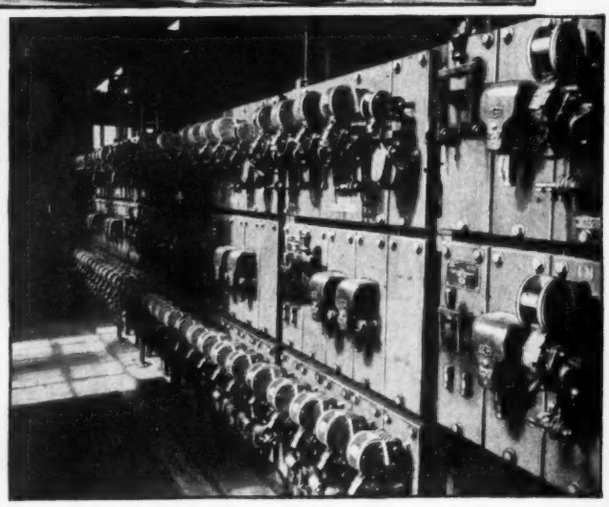
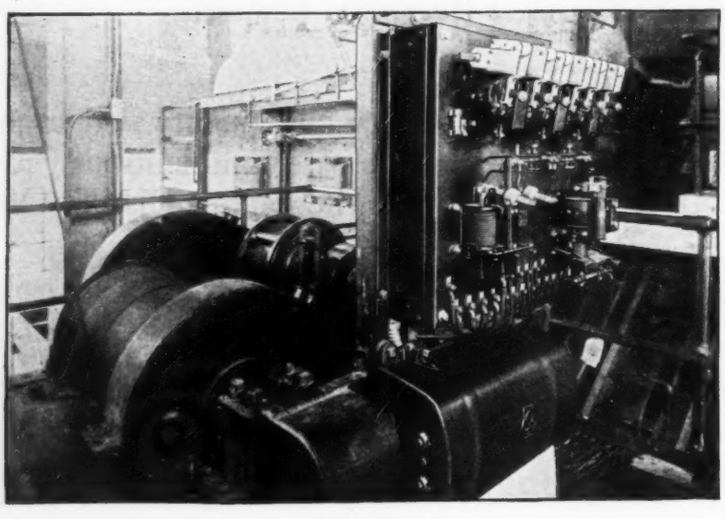
Motors last longer





Showing three hot-beds and a crane all C-H *ITL Controlled* in the plant of a leading steel mill. C-H *ITL Control* Panels for hot-beds shown to right.

The best control for your *next* hoist must be designed to order



Each hoist control has individual characteristics and variations which make it a problem to be studied and solved on its own merits.

To insure Control that renders maximum returns, obviously the designers must possess as long and varied experience as possible, a record of repeatedly successful results. Leading steel plants bring all their hoist control problems to C-H Engineers, for the success of C-H Engineers, their engineering ability, are well known . . . and backed up by more than 30 years' experience.

when you remember that some loads are heavy—some light

Control so inflexible that it has to be set for maximum . . . punishes motors unduly . . . hastens their journey to the scrap pile. C-H *ITL Control* is not so inflexible.

Set for average loads, C-H *ITL Control* allows maximum current for *peak* loads. But on average loads . . . which constitute the great majority . . . *ITL Control* permits the motor to draw *only* what current it needs. It slides the motor up to full acceleration smoothly . . . with an absence of the "jumps" that rack equipment—then permits current to drop to low, constant-speed requirements.

ITL Control also assures protection against "burn-outs." For just as surely as the load proves too heavy, *ITL Control* cuts the motor off the line.

C-H *ITL Control* is of simplest design consistent with the protection and flexible Control of the motor it provides. There are no dashpots and relays on the accelerating contacts. *ITL Control* is rugged and durable. Its specially constructed contactor tips and blow-out shields have set the pace for long life.

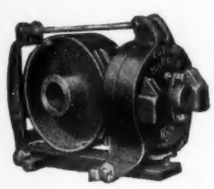
The descriptive booklet, *"Steel Must Never Stop,"* is full of interest for every mill executive.

Send for your copy.

CUTLER-HAMMER, Inc.
Pioneer Manufacturers of Electric Control Apparatus
1265 St. Paul Avenue Milwaukee, Wisconsin

CUTLER HAMMER

The Control Equipment Good Electric Motors Deserve



Unusual Metal-Handling Savings—with C-H "Red Top" Magnets

C-H methods of coil-winding assure super-lifting power. Vacuum and pressure impregnation eliminates air pockets, thus preventing shorts which cause burn-outs. Special shell design and construction result in remarkable shock-resisting strength. C-H "Red Tops" are safe even for unskilled operators—for the control panel is entirely enclosed—the contactors operated by a "master" on a separate circuit.

For Fast Stopping and Starting— C-H Type M Brakes

Simplicity, *direct* transmission of power, shortest practical shoe stroke, large braking and bearing surfaces—these features guarantee lightning-fast braking and freeing of the load as well as negligible maintenance throughout years of service. No adjustment is needed until brake linings are practically worn out. C-H Brakes are made for every type of application.

(8625)

Lower Production Costs through Linde

"One-fifth

off our entire production cost of steel barrels is the result to us of Linde Process Service," says a prominent manufacturer, "an annual saving running well into five figures."

This manufacturer was effectively using the oxy-acetylene process of welding and cutting when Linde was called in. He was already taking advantage of all its apparent economies in both production and maintenance. Still, through the broader and more comprehensive experience of the Linde Service organization, this important additional saving was effected.

Linde Process Service is but one reason why Linde Oxygen has the greatest sale of any oxygen. This Service is available without cost to Linde users.

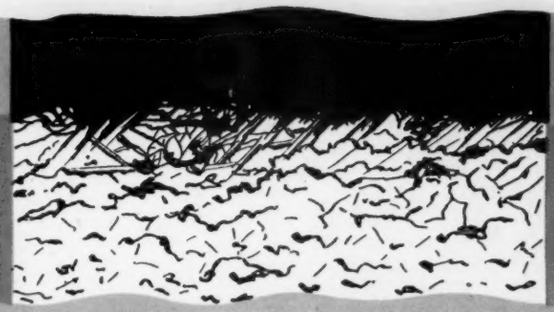
THE LINDE AIR PRODUCTS COMPANY
Unit of Union Carbide and Carbon Corporation

64 Plants UCC 154 Warehouse Stocks
General Offices: Carbide and Carbon Building
30 East 42nd Street, New York

LINDE OXYGEN

NITRIDED NITRALLOY

THE HARDEST KNOWN STEEL SURFACE



Even When Hot—It's Hard!

That's a test that Nitrided Nitralloy passes every day. In the hottest parts of automobile and aviation engines, on vital wearing parts of oil equipment and fire engines and in countless valves, dies, gears and cams, heat and wear are daily overcome by this new processing method of hardening Nitralloy Steels.

Nitrided Nitralloy retains its hardness up to 1400°F (low red heat), is moderately resistant to atmospheric and water corrosion; is far superior to carburized material, and has extreme resistance to sliding or rolling effects.

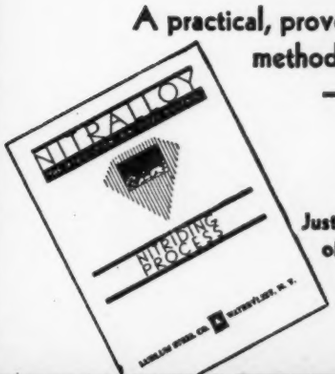
And It Resists Wear

Wherever You Have

Heat, Wear, Poor Lubrication, or Extreme Conditions

Use the Ludlum Nitriding Process

A practical, proven, quantity production method for hardening Nitralloy —a Ludlum alloy steel



WRITE FOR THIS BOOKLET—

Just off the Press; gives illustrations of applications and full description of methods and results obtained.

LUDLUM

LUDLUM STEEL COMPANY WATERVLIET AND DUNKIRK, N. Y.

NITRALLOY, STRAUSS METAL TOOL & ENDURO NIROSTA STEELS

LUDLUM

A MULTIPLE-LIFE STEEL FOR WEAR RESISTANCE

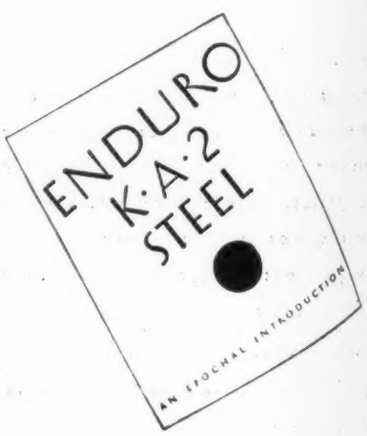
Whether you manufacture machines—or use them—you will be interested in the economy obtained with Nitralloy for wearing surfaces. For sliding or rolling wear it means doubled—trebled—multiplied life. In many cases, 30 times the length of service has been obtained—a truly remarkable advantage over the best of former materials. Somewhere you have conditions of wear which Nitralloy will greatly improve.

Ludlum representatives are prepared to co-operate with you in overcoming losses heretofore deemed unavoidable.

In the meantime, write for this booklet: «Nitralloy and the Nitriding Process.» It contains a complete description with illustrations and operating data.

Have you a copy of this booklet—«Enduro KA2 Steel»—a comprehensive description of this outstanding steel ?

Its field of value includes all industries.



)LUM STEEL CO. Watervliet, N.Y.
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Die Steels
Tool Steels
Strauss Metal (Tungsten Carbide)

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Ludlum steels are modern—they include advanced analyses and heat treatments. Whether you need Tool or Die steels, Strauss Metal (tungsten carbide) for cutting, Nitralloy for wear resistance, or Enduro Nirosta for corrosion and heat resistance, you will find the Ludlum mills at your service.

LUDLUM STEEL COMPANY
NITRALLOY, STRAUSS METAL

WATERVLIET AND DUNKIRK, NEW YORK
TOOL & ENDURO NIROSTA STEELS

2878

LUDLUM STEEL COMPANY

"Oxweld carries on when the others quit . . ."

A STUDENT engineer characterizes the above phrase as "my simplest way of expressing the reason for my choice of Oxweld equipment as being superior to others." This young man had just completed his curricular requirement in oxy-acetylene welding and cutting at a prominent engineering school. Ninety-two per cent of his classmates also chose Oxweld.

There is a similar marked preference for Oxweld in industry. The reason is economic. Oxweld blowpipes, embodying the Oxweld low-pressure injector principle, give more welding, more cutting, more hours, months and years of operation. They carry on when the others quit.

Reliable—Economical—Long-Lived
Typically Oxweld

OXWELD

WELDING AND CUTTING APPARATUS AND SUPPLIES

OXWELD ACETYLENE COMPANY
Unit of Union Carbide and Carbon Corporation

NEW YORK
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STOCKS IN 38 CITIES

STEEL
the basic metal of industry
. . the name "Carnegie" has been identified with steel manufacture for nearly three quarters of a century . . . . . a good name to look for on Steel . . . . . .

CARNEGIE STEEL COMPANY

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Pacific Coast Distributors—United States Steel Products Company, San Francisco, Los Angeles, Portland, Seattle, Honolulu. *Export Distributors*—United States Steel Products Company, New York City

Perfect by comparison . . .

SO simple a thing as a cap screw should easily be made perfect in every detail, you may feel. Yet by no means are all cap screws as perfect as these we make by the Kaufman Method, *patented.*

Examine Cleveland Cap Screws closely. See how true the chamfer is; observe the sharp, straight faces; feel how smooth the heads are. And note the threads particularly—the first thread and the last thread is complete.

This care in their making has made complete warehouse stocks at seven convenient shipping points a necessity.

THE CLEVELAND CAP SCREW CO., 2921 E. 79th St., Cleveland, Ohio

Address the Nearest Company Warehouse—Complete Stocks At

CHICAGO, 726 W. Washington Blvd. PHILADELPHIA, 12th and Olive Sts. NEW YORK, 47 Murray Street
DETROIT, 520 W. Congress Street SAN FRANCISCO, 548 Howard Street LOS ANGELES, 224 E. 11th St.

CLEVELAND

CAP SCREWS

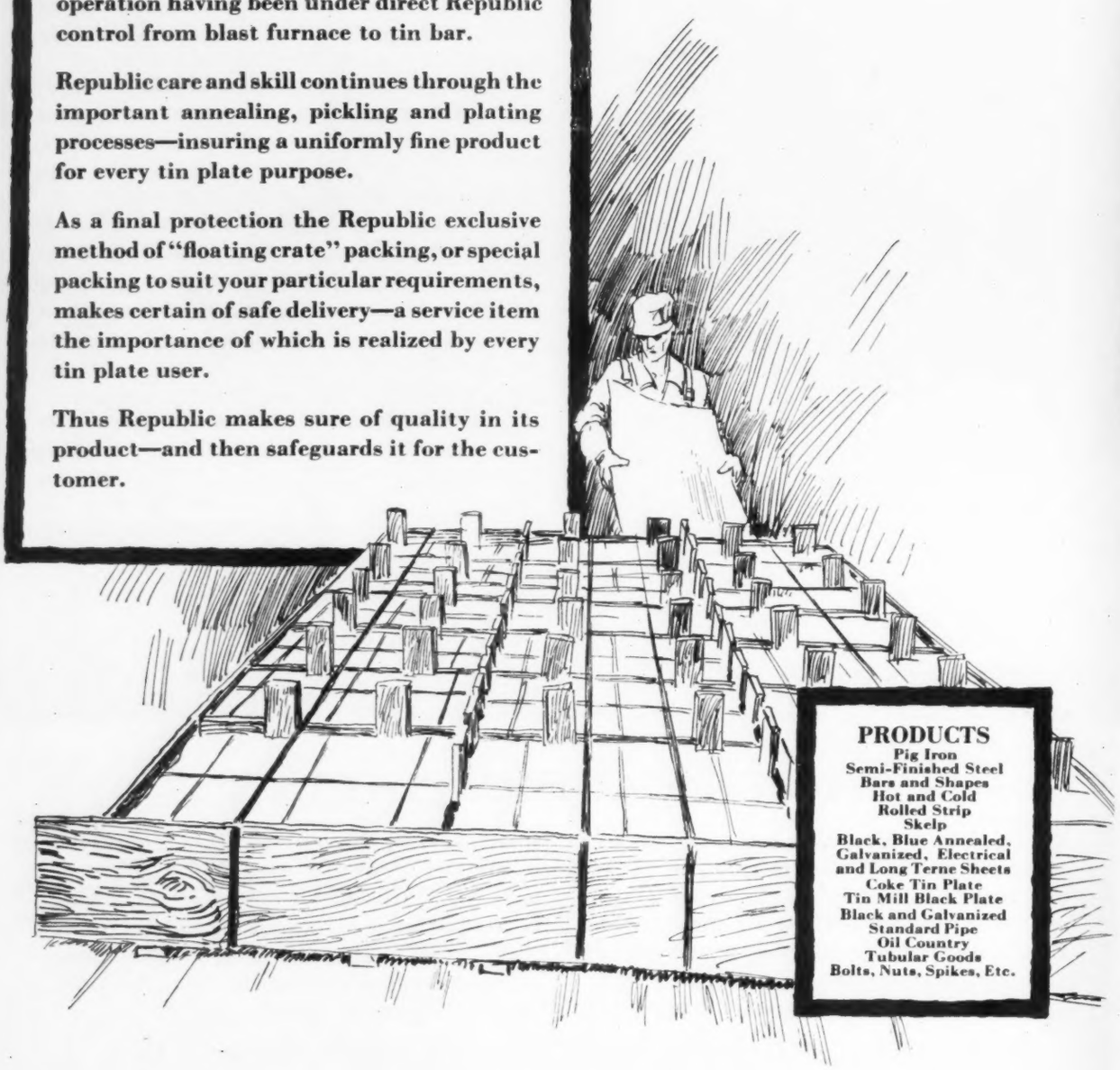
How Republic Protects Tin Plate Quality for the Buyer

Republic Tin Plate quality is far deeper than mere surface quality. To begin with, there is rolled-in quality in the steel itself . . . every operation having been under direct Republic control from blast furnace to tin bar.

Republic care and skill continues through the important annealing, pickling and plating processes—insuring a uniformly fine product for every tin plate purpose.

As a final protection the Republic exclusive method of "floating crate" packing, or special packing to suit your particular requirements, makes certain of safe delivery—a service item the importance of which is realized by every tin plate user.

Thus Republic makes sure of quality in its product—and then safeguards it for the customer.



PRODUCTS
Pig Iron
Semi-Finished Steel
Bars and Shapes
Hot and Cold
Rolled Strip
Skelp
Black, Blue Annealed,
Galvanized, Electrical
and Long Terne Sheets
Coke Tin Plate
Tin Mill Black Plate
Black and Galvanized
Standard Pipe
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TIN PLATE

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Cleveland
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Denver
Detroit
El Paso
Los Angeles
New York
Philadelphia
Pittsburgh
San Francisco
Seattle
St. Louis

TRADITION PROGRESS

"Here, Lad—

Poor old Jake just came up from the pattern shop to tell me his woes.

It's just 40 years since he took charge and being one of the best pattern makers has expected his son to carry on.

But the boy has left and Jake can't seem to get any bright young comer as his helper.

Youth seems to have no conscience."

The Lincoln "Stable-Arc" Welder

—welds easier
—makes better welds
—permits greater output because of the steady uniform arc throughout entire welding range, which is the result of:

Variable voltage design
Laminated magnetic circuit
Separately-excited generator field
Double control of welding heat
All steel construction

No other welder has all these features.

"Yes, Pop—

but the trouble is that conscience is usually another word for cold feet . . . and hot feet is the modern tempo.

Pattern making is great for anyone to *learn*—so is Greek and Latin.

Each manufacturer should learn pattern making.

It builds up a background that enables him to grasp the savings and better shop practice that 'Stable-Arc' welding makes possible.

So Jake did right in teaching the boy pattern making—and the boy did right in leaving, to take up a course in arc welding at the Lincoln plant. Now he's got a grasp of the past, present and future.

Neither should be blamed—but too often youth is blamed for everything except heredity."

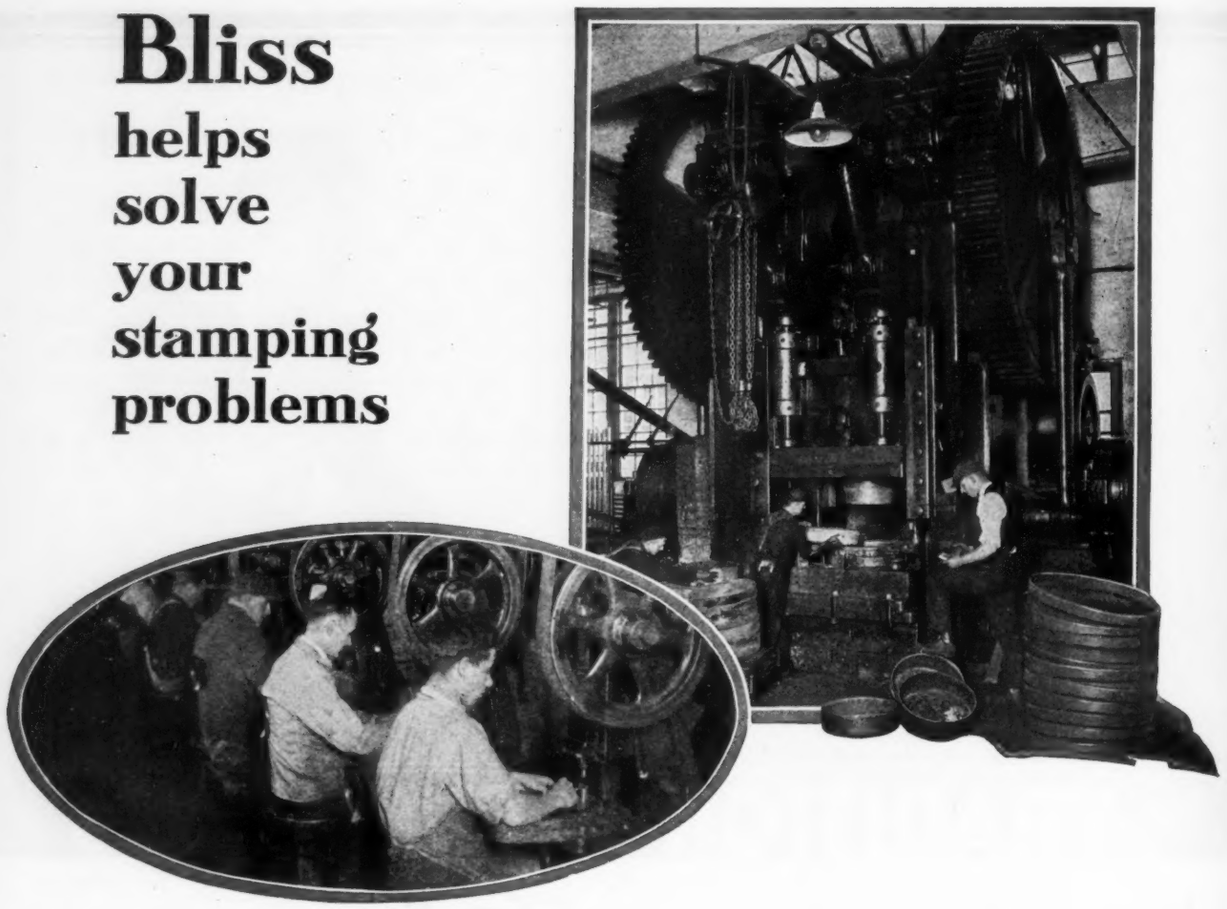
The Lincoln Electric Co., Dept. 20-6, Cleveland, Ohio

W-90

"Linc-Weld"

LINCOLN MOTOR

Bliss helps solve your stamping problems



IN many cases Bliss engineers have found a simple, economical and speedy method of performing operations that had previously been considered unavoidably laborious and costly.

Whether your sheet metal operations involve blanking, drawing, punching, piercing, stamping, or embossing light or heavy gauge parts in any size or shape, the extensive experience of the Bliss engineers can be of real help to you.

Even though your particular problem may be unique, at least some of its phases have already been solved by Bliss equipment of various types, and the Bliss recommendations have behind them the authority of 70 years of experience and highly successful designs.

BLISS

E. W. BLISS CO. MAIN OFFICE AND WORKS **BROOKLYN, N. Y., U. S. A.**

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American Factories: BROOKLYN, N. Y. HASTINGS, MICH. SALEM, OHIO

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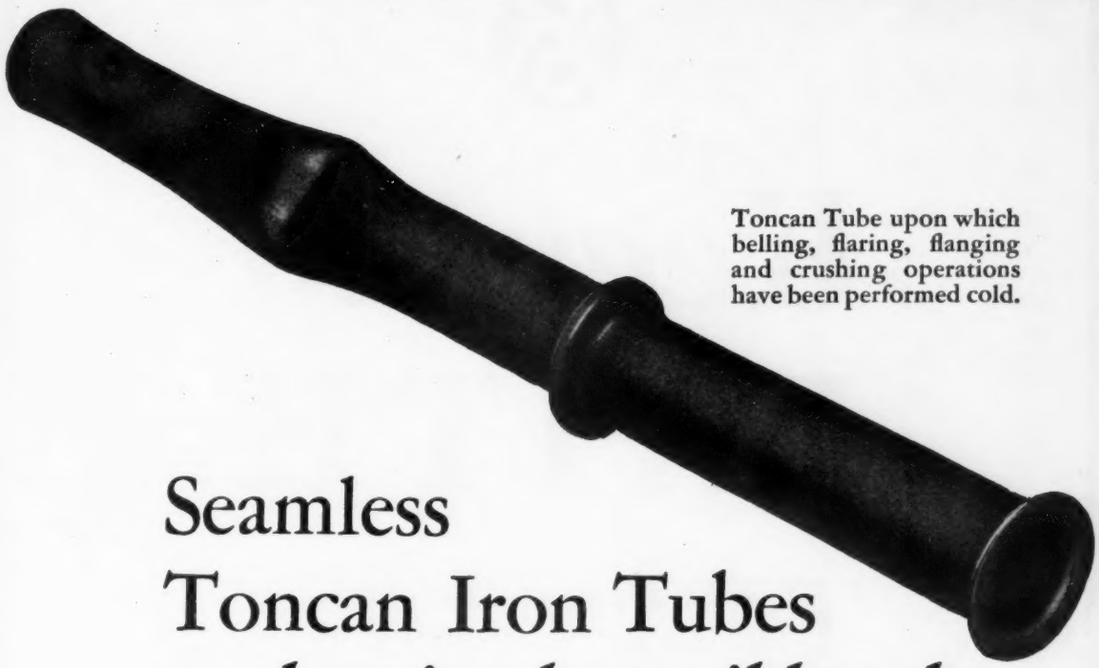

Toncan Tube upon which belling, flaring, flanging and crushing operations have been performed cold.

Seamless Toncan Iron Tubes *work easier than mild steel*

SEAMLESS Toncan Iron removes the last handicap of the iron tube—it presents no application difficulties.

A Seamless Toncan Iron tube works easier than mild steel. Expand it, crush it, roll it and weld it as you would steel—but *without* any loss of corrosion resistance at the point where cold working takes place.

And Seamless Toncan tubes last far longer. They have the natural corrosion resistance of pure iron greatly increased by the addition of copper and molybdenum; plus the high strength and uniformity of the seamless tube.

Seamless Toncan Iron tubes are available in sizes up to 5½ in. outside diameter—and can be furnished in unusually long lengths. The Seamless Toncan Iron Tube bulletin will be gladly sent on request.

Toncan Iron, a product of Central Alloy Steel Corporation, worked into seamless tubes and pipe exclusively by

THE BABCOCK & WILCOX TUBE CO.

Works and General Offices:
Beaver Falls, Pa.

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REG. U. S. PAT. OFF.
TONCAN
COPPER
Tubes Mo-lyb-den-um Piping
IRON

General Sales Office:
85 Liberty Street
New York

Keeping FAITH

THE Youngstown Sheet and Tube Co. has always considered its customer's satisfaction as an inviolable trust. That is why the Youngstown standard of quality has been so zealously maintained. It is for this reason that the Youngstown Sheet and Tube Company, has never lost sight of the personal element in its dealings.

The name Youngstown on any steel product is a pledge of unvarying high quality; of personal service sheared of all red-tape formality; and of unlimited expert steel counsel when this is requested.

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

One of the oldest manufacturers of copper-bearing steel, under the well-known and established trade name "Copperoid".

General Offices—YOUNGSTOWN, OHIO

DISTRICT SALES OFFICES

ATLANTA—Healey Bldg.
BOSTON—80 Federal St.
BUFFALO—Liberty Bank Bldg.
CHICAGO—Conway Bldg.
CINCINNATI—Union Trust Bldg.
CLEVELAND—Union Trust Bldg.
DALLAS—Magnolia Bldg.
DENVER—Continental Oil Bldg.
DETROIT—Fisher Bldg.
KANSAS CITY, MO.—Commerce Bldg.
MINNEAPOLIS—Andrus Bldg.
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ST. LOUIS—Shell Bldg., 13th and Locust Sts.
YOUNGSTOWN—Stambaugh Bldg.

LONDON REPRESENTATIVE—The Youngstown Steel Products Co., Dashwood House, Old Broad St., London, E. C. England

Brassert Disintegrator

The Improved Rotary Gas Washer

Manufactured by

Ingersoll-Rand Company

Built according to best American standards of heavy construction and reliable design. Self aligning roller bearings, heavy shaft, precision balance, rotating bars made from heat treated high chromium alloy steel forgings.

No Internal Fan Elements

Therefore:

No danger from explosions due to suction in gas system.
Independent control of gas cleaning from that of distribution.
Less power required for cleaning and distribution.

Positive Water Distribution

Therefore:

Minimum water and power consumption with maximum cleanliness.

No Corrugated or Complicated Surfaces

Therefore:

No clogging or building up, machine will stay clean and maintain balance.

Uninterrupted Operation

As demanded by American practice.

After a long period of operation on an American furnace making high silicon foundry iron, an inspection showed the interior of the Brassert Disintegrator to be absolutely clean with rotating members in perfect balance. The Brassert eliminator following it, also showed no evidence of plugging; the means provided for flushing during operation had kept it clean.

We guarantee to deliver gas at stoves, boilers, open hearth furnaces, soaking pits, heating furnaces: and coke ovens with a cleanliness of .02 to .005 grains per cu. ft. as required.

H. A. BRASSERT & CO.

Engineers and Contractors

CHICAGO
310 South Michigan Avenue

LONDON
Brookhouse-Walbrook E. C. 4

Brassert Hot Blast Stoves

Brassert Checker Construction
Combines the following Fundamental Principles

Largest Heating Service and Greatest Brick Volume

Per unit of checker volume

Most Effective Heat Transfer

By gas and air traveling at equalized velocities through graduated checker openings and by turbulence created therein through our Patented System of Filler Brick

Continuous Checker Openings

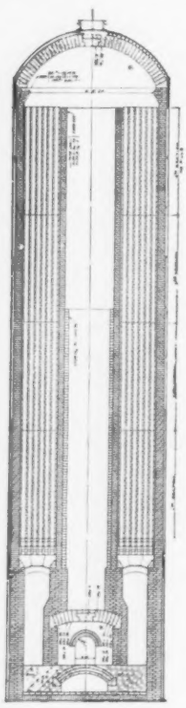
From top to bottom in vertical alignment

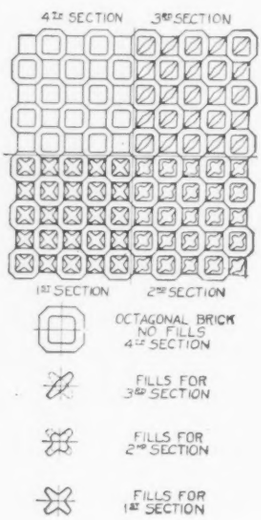
Permitting Inspection and Cleaning of Checkers

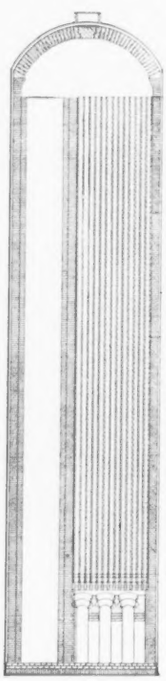
Greatest Structural Strength of Checker Column

by both horizontal and vertical joints being broken

We are pleased to announce that all modern high efficiency stoves designed for clean gas (below .02 grains per cubic foot) which have so far been built in this country and which embody the above stated principles contain the Brassert checkerwork. This design has given complete satisfaction in service and has resulted in the greatest gas economy.







H. A. BRASSERT & CO.

Engineers and Contractors

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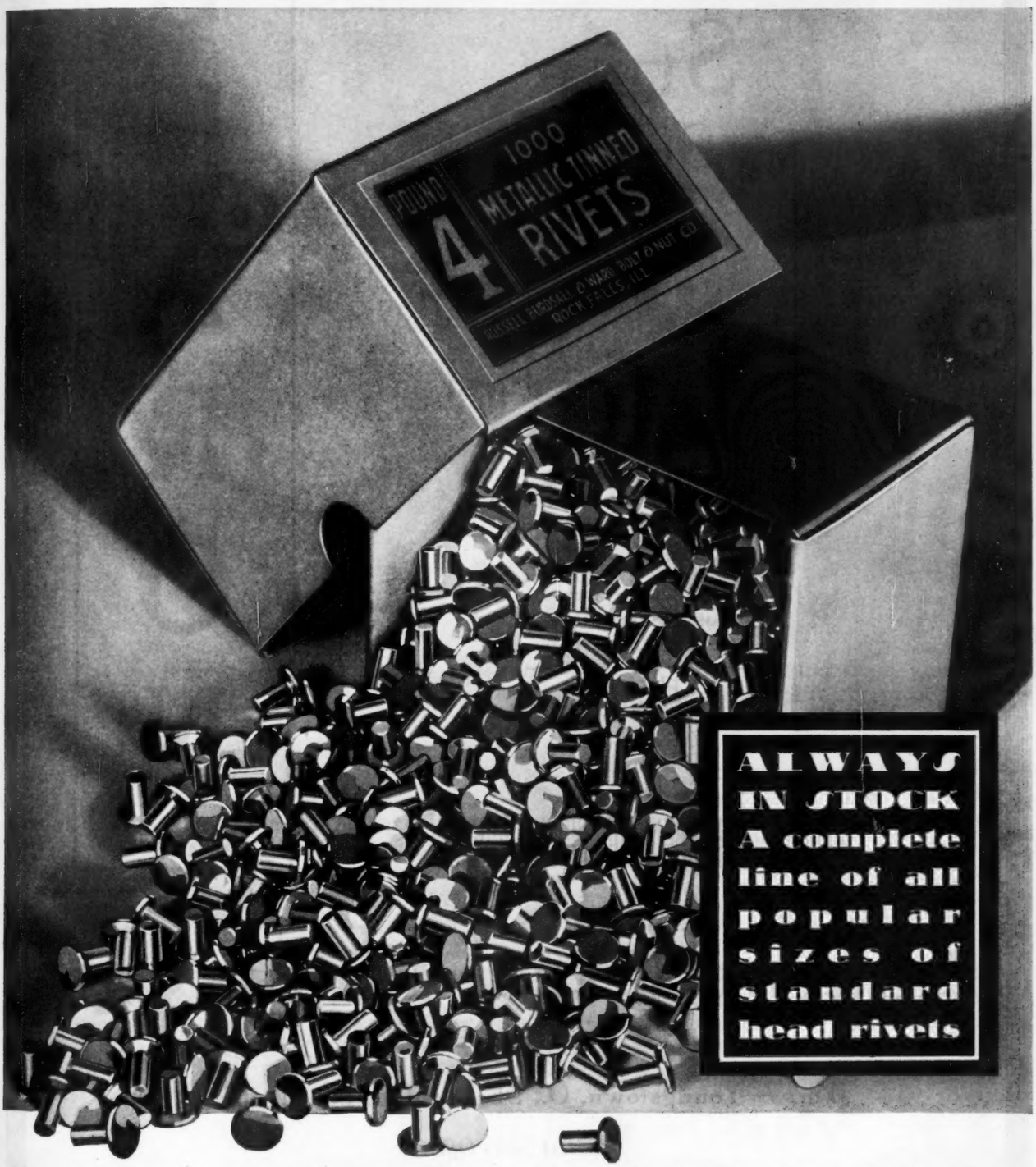
EMPIRE RIVETS



RUSSELL, BURDSALL & WARD BOLT & NUT CO.

ROCK FALLS, ILL. **PORT CHESTER, N. Y.** **CORAOPOLIS, PA.**

Sales Offices at Philadelphia, Chicago, Detroit, San Francisco, Los Angeles, Seattle, Portland

Cold Rolled Strip Steels

Service and Quality First

Pillar Post Stock
Moulding Stock
Hinge Butt Stock
Tubing Stock
Cupping Stock
Rim Stock
Brake Band Stock
Hose Clamp Stock
Grease Cup Stock

Finishes Suitable for
Nickel Plating
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SHARON

Sharon Steel Hoop Co.

Sharon, Pa.

Works—Youngstown, O., Sharon, Pa., Lowellville, O

District Sales Offices

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The Short Cut

to Mechanical Parts

IN this modern day and age, no matter what the industry or field of endeavor, the quickest and shortest route to efficient results is the main thing sought after. In the manufacture of machinery parts, especially is this advantage desirable, on account of the labor, tools and machine work required in the shaping up of the different commodities.

"NATIONAL-SHELBY" Seamless Tubing, in thousands of cases, is a short-cut for manufacturers and machinists in the making of their product. You may find among the various shapes, sizes and wall-thicknesses of "NATIONAL-SHELBY" Tubing a material of just the right dimensions, grade of steel and anneal for your present or prospective requirements.

In many cases "NATIONAL-SHELBY" Tubing is used just as it comes from the mill, with possibly a light finishing cut or grinding, and wherever used in place of solid stock, machine work is reduced, tools and labor saved, and exceptional uniformity obtained in the finished product.

Ask for Bulletin No. 17. Among the production "short-cuts" it indicates you may find a suggestion of much value or a solution to some difficult problem.

NATIONAL TUBE COMPANY

Frick Building, Pittsburgh, Pa.

SUBSIDIARY OF

UNITED STATES STEEL CORPORATION

Quality Products — *Dependable Service*

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES:

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL AND WIRE COMPANY
CARNEGIE STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPBUILDING AND DRY DOCK COMPANY
ILLINOIS STEEL COMPANY
MINNESOTA STEEL COMPANY
NATIONAL TUBE COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & R. R. COMPANY
UNIVERSAL PORTLAND CEMENT COMPANY

Pacific Coast Distributors—United States Steel Products Company, San Francisco, Los Angeles, Portland, Seattle, Honolulu. *Export Distributors*—United States Steel Products Company, New York City

"A. W."

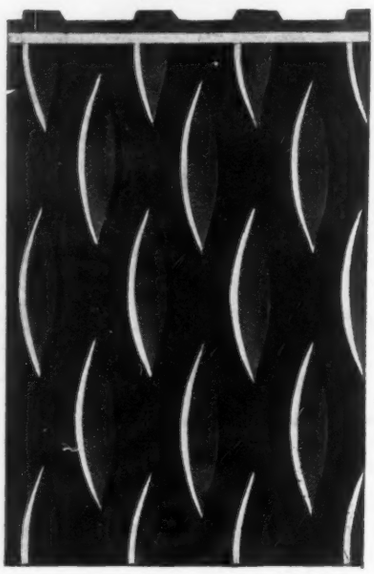
RAISED DIAMOND

FLOOR PLATES
for all purposes

obtainable in all metallic elements and alloys—

bronze, brass, copper, aluminum, lead, zinc, nickel, monel metal, stainless steel or any other known metal

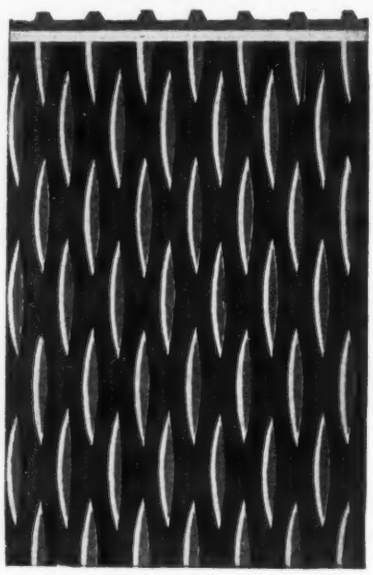
STANDARD
"A. W." DIAMOND
(one-half size)



For general structural purposes, including all forms of Step, Flooring, Platform, and Runway Construction.

Thickness.....⅛" to 1"
Width.....72" maximum
Length.....25' maximum

"A. W."
DIAMONDETTE
(one-half size)



Unequaled for Automobile Running Boards, Foot Boards, Flooring, Platforms, Walkways, etc., where raised anti-slip surface is required without necessity for supporting strength.

No. 16, 14, and 12 gauge
(Exclusive of Pattern)
Maximum Sizes

No. 12 and No. 14 — 24" x 192" or 36" x 144"
No. 16 — 30" x 96"

"A. W." PRODUCTS

"Swede" Pig Iron
Billets, Blooms, Slabs
Sheared Steel Plates
Blue Annealed Sheets
Rolled Steel Floor Plates

All Engineering Information on Request

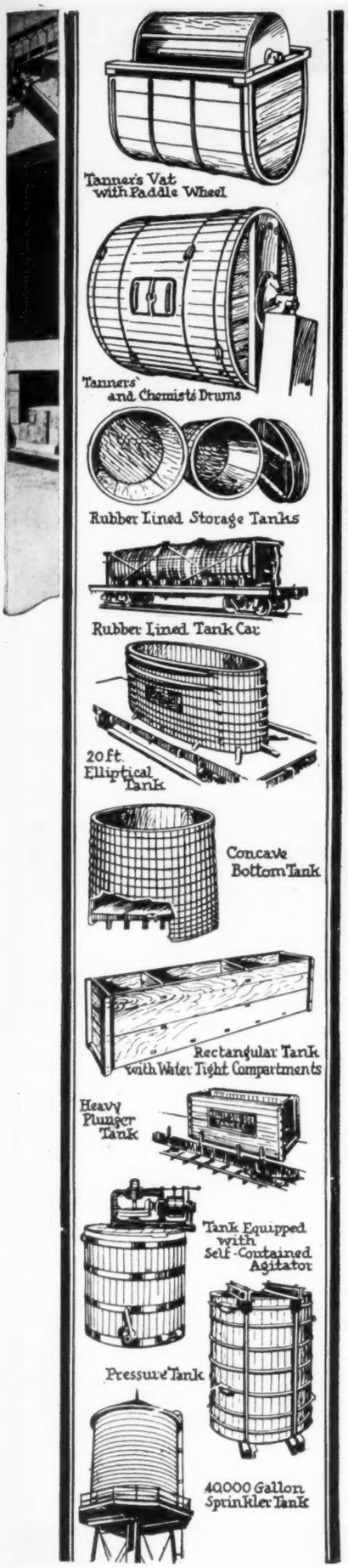
ALAN WOOD STEEL CO. ESTABLISHED 1826 "A.W." TRADE MARK CONSHOHOCKEN, PA.

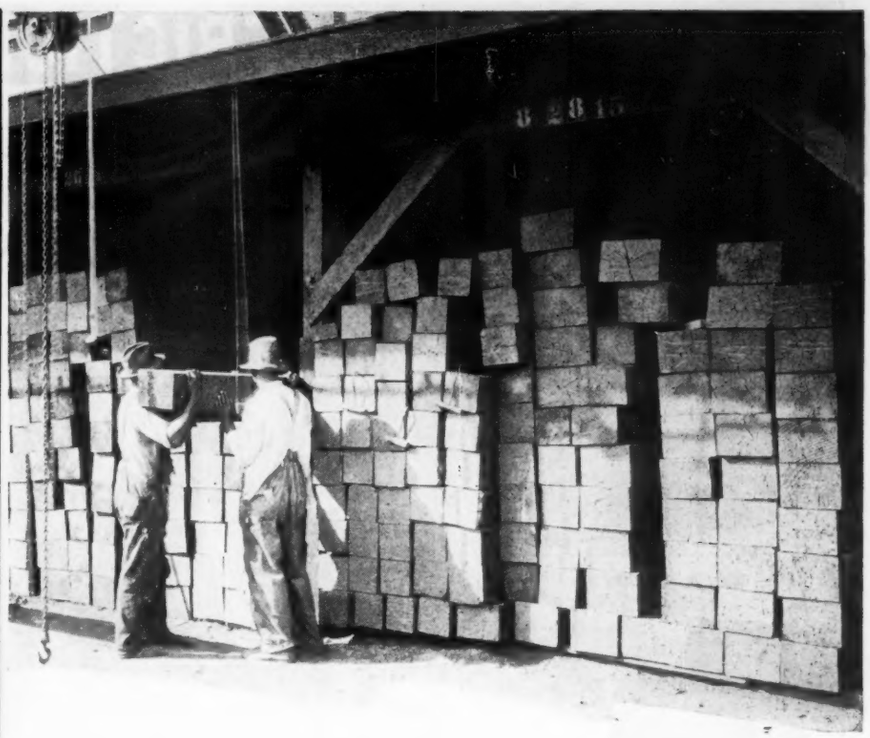
ALAN WOOD STEEL COMPANY

Formerly ALAN WOOD IRON AND STEEL CO.

Conshohocken, Pennsylvania

Philadelphia New York Boston San Francisco Seattle Los Angeles Dallas


Tanner's Vat with Paddle Wheel
Tanners' and Chemists Drums
Rubber Lined Storage Tanks
Rubber Lined Tank Car
20 ft. Elliptical Tank
Concave Bottom Tank
Rectangular Tank with Water Tight Compartments
Heavy Plunger Tank
Tank Equipped with Self-Contained Agitator
Pressure Tank
40,000 Gallon Sprinkler Tank



Careful Selection

EVERY stick of lumber used in Hauser-Stander Heavy Pickling, Acid Storing and other Wooden tanks must pass the close scrutiny of master tank builders.

After cutting up the lumber to fit each customer's individual requirements, it is rapidly assembled by experts with the help of special machinery. After the "Watertight Test", which every Hauser-Stander Tank must undergo, it is shipped to the customer ready for long, strenuous service.

Specify Hauser-Stander Tanks for longer service.

May we send you a copy of our latest catalog?

"We Win With Quality"

The Hauser-Stander Tank Co.

Cincinnati, Ohio, U. S. A.

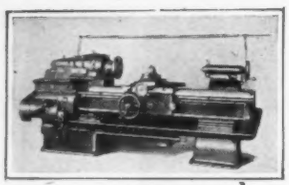
THE JOHNSON FRICTION CLUTCH

As Used In The

IRON and STEEL INDUSTRY

On Various Types of MACHINE TOOLS

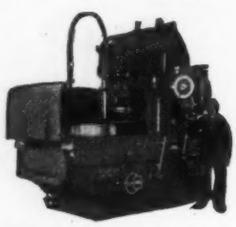
LATHES



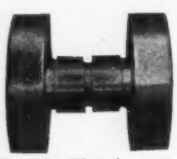
Pratt & Whitney Co.

Single Clutch Pulley

GRINDERS

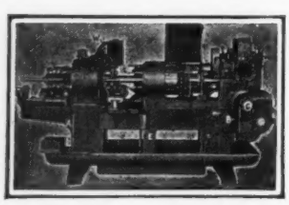


Blanchard Machine Co.



Double Clutch with Pulleys

AUTOMATIC SCREW MACH.



The Cleveland Automatic Machine Co.

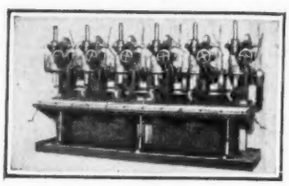
This is the well known JOHNSON Clutch used nation-wide in all industries—Machinery, Textile, Dairy, Paper, Woodworking, Automotive—every known field of manufacturing enterprise. It's the clutch that all America and Europe know as the clutch of **quality, compactness, performance** and **dependability**—the *JOHNSON*. Prompt - start. Quick - stop. Absolute control.

JOHNSONS are superb on all machinery. So powerful. So nicely balanced. Our *JOHNSON* users' list reads like a roll call of American Machinery builders. National Acme alone has used 16,000 *JOHNSON* Clutches. We have 70,000 illustrated clutch reprints. They tell all. Gratis for the asking. Equip with *JOHNSONS*.

WRITE
for
CATALOG
"WHITE—64"

Single Clutch Exterior

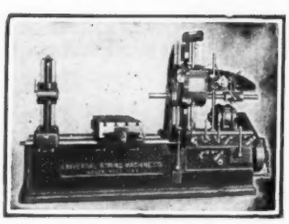
DRILLS



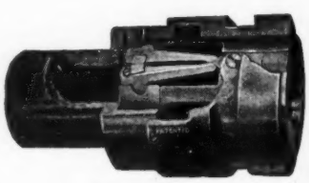
W. F. & John Barnes Co.

Double clutch exterior

BORING MILLS

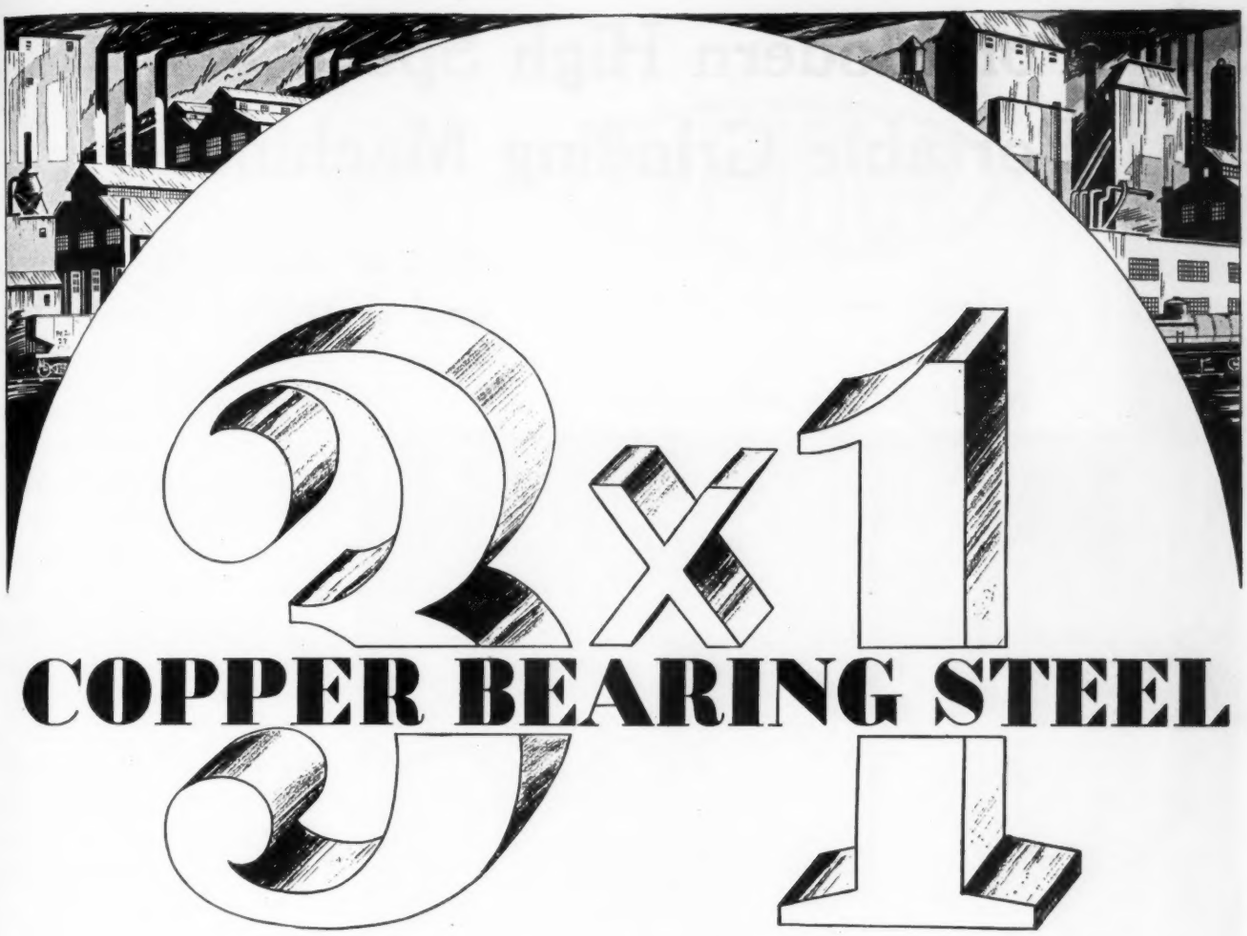


The Universal Boring Machine Co.



Single Clutch Showing Working Parts

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.



2x1 COPPER BEARING STEEL

Three Times The Life of Ordinary Steel

The addition of copper to steel results in the production of sheets and plates whose life is approximately three times that of ordinary steel.

This longer life is due to the extra resistance which Copper Bearing steel offers to the attacks of rust and corrosion.

With it, depreciation is reduced and property maintains itself in far better condition over longer periods of time. This is particularly true where there is exposure to weather and dampness either above or below ground.

With all its advantages, Copper Bearing steel costs only a very little more than ordinary steel.

We will be glad to give you full information on Granite City sheets and plates in Copper Bearing steel. As always, you can expect superior service under the Granite City Sheet trade mark, for our ideal mill location at Granite City, Illinois provides unmatched shipping advantages to the Mississippi Valley, the West and the Southwest via 28 railroads and the Mississippi River.

GRANITE CITY COPPER BEARING SHEETS

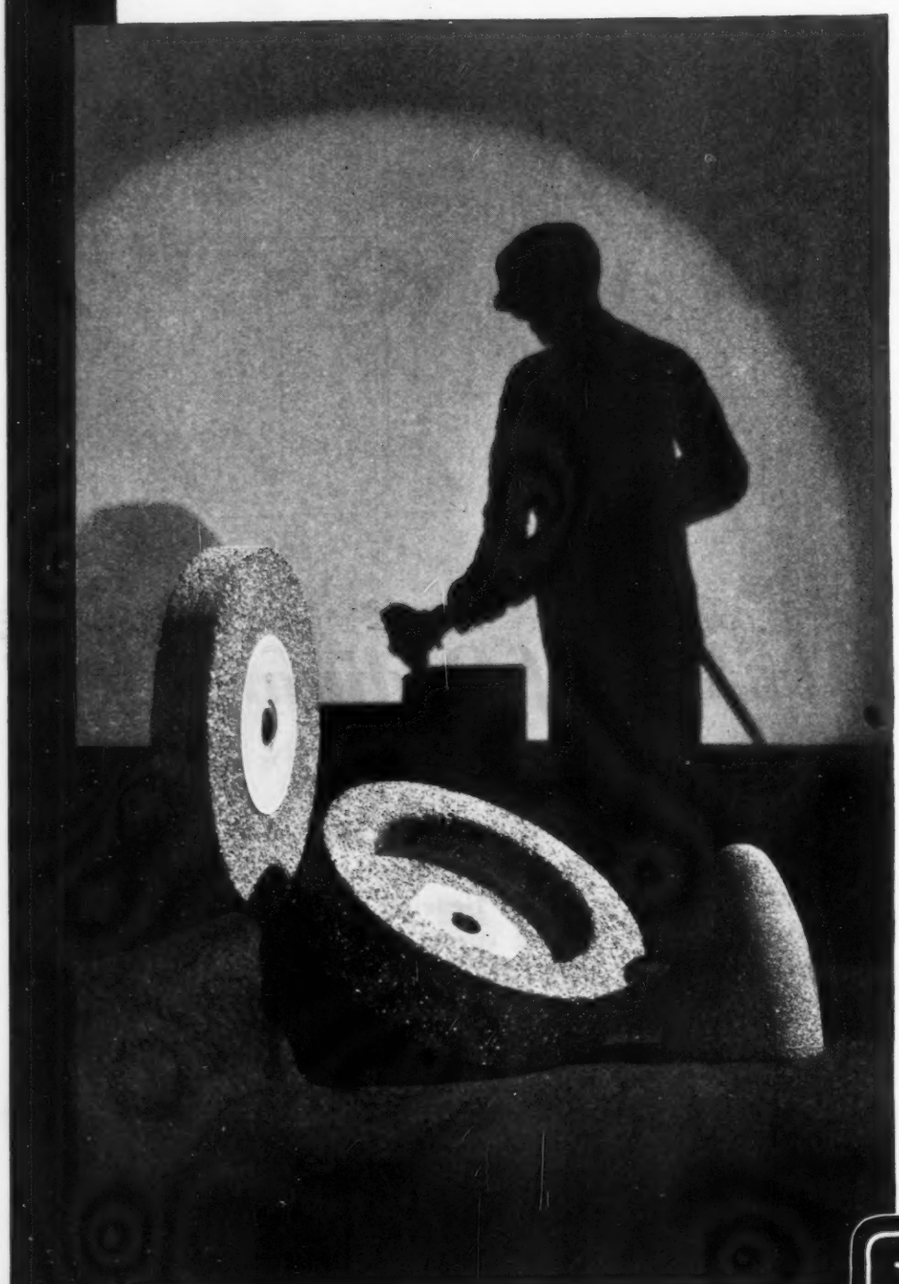
Chicago · · Dallas · · Kansas City
Los Angeles · Memphis · St. Louis · St. Paul
San Francisco · · Salt Lake City · · Seattle

GRANITE CITY STEEL CO. GRANITE CITY ILLINOIS

Galvanized, Blue Annealed and Black Sheets - Plates and Tin Plate

For Modern High Speed Portable Grinding Machines—

Norton Bakelite Wheels and Vitrified Cones



With their open structure and high operating speed Norton Bakelite bonded snagging wheels remove maximum metal at minimum cost. They were designed and developed for today's high speed machines.

And for the hard-to-get-at places there are Norton vitrified cone wheels. They, too, are for modern high speed machines.

NORTON COMPANY
Worcester, Mass.

New York, Chicago, Detroit, Philadelphia, Pittsburgh, Cleveland, Syracuse, Hartford.

Norton Company of Canada, Ltd.
Hamilton, Ontario

NORTON PRODUCTS

Grinding Machines
Lapping Machines

Grinding Wheels
Abrasives for
Polishing
Glass Grinding
Paper and Cloth
India Oil Stones

Laboratory Ware
Refractories
Porous Plates

Norton Floors
Alundum Floor and Stair Tiles and Alundum Aggregates

W-251a

NORTON
GRINDING WHEELS

There is usually one best metal for every requirement.

The American Brass Company, through its Technical Department, is prepared to help determine what this metal is and if the need can be met most advantageously with copper or an alloy of copper, to supply the metal in uniform, dependable quality.

Reg. U. S. **EVERDUR** Pat. Off.

[A COPPER-SILICON-MANGANESE ALLOY]

Combines the strength of steel and high resistance to corrosion with good machining qualities . . . .

Everdur Metal is manufactured by The American Brass Company in the form of sheets, rods, tubes, wire and casting ingots. In general, it may be worked by the following methods:—

Forging. Everdur flows readily under the hammer and may be hot forged without difficulty.

Welding. Everdur can be welded by either the oxy-acetylene or electric arc process. It can also be seam or spot welded on automatic welding machines. The same methods employed in oxy-acetylene welding bronze are generally applicable to Everdur.

Brazing. Everdur may be brazed and soldered in the same manner and with the same equipment used for copper and bronze.

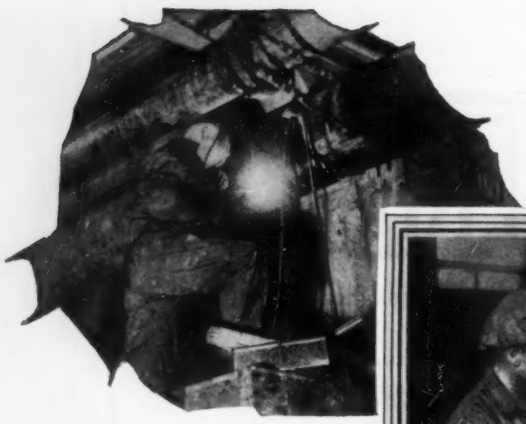
Casting. Everdur casts readily in green sand, producing sound homogeneous castings of good strength, toughness and workability.

Machining. The machining qualities of wrought Everdur are practically the same as those of any high tensile strength bronze and considerably better than those of steel. For hot rolled unannealed and cold rolled or cold drawn material, the same tools may be used as for steel, but the cutting speed may be materially increased.

Detailed information on the physical properties of Everdur is contained in Bulletin E-2 (Third Edition). May we send you a free copy?

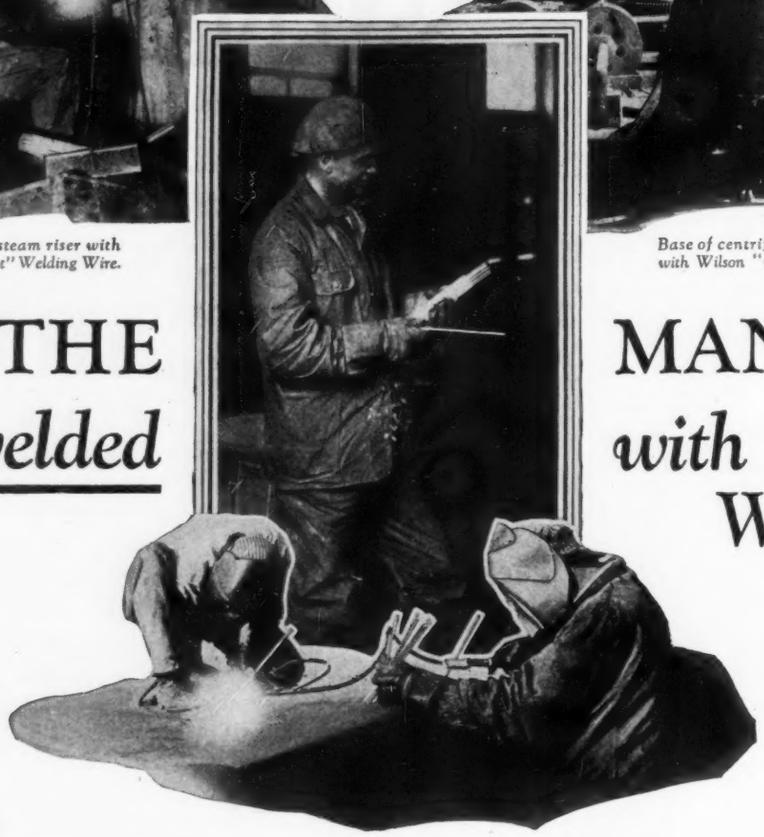
THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Offices and Agencies in Principal Cities

ANACONDA
COPPER ANACONDA BRASS



Welding a 16" steam riser with Wilson "Color-tipt" Welding Wire.

Base of centrifugal pump being welded with Wilson "Color-tipt" Welding Wire.



ASK THE MAN WHO *has welded with Wilson Wire!*

HE WILL tell you that you can always secure just the *right* grade (analysis) of Wilson Wire for the particular metal you are welding. He will tell you that every grade is *uniform*—that every rod runs the same as every other rod of the same grade and diameter—whether purchased last year, today, or a year hence.

The *correct analysis* and *perfect uniformity* in Wilson Wire insure *more metal* deposited in the weld—and this means not only better welds but wages saved.

Give your welders the right grades of Wilson Wire for the metals they are welding: No. 4 for securing a hard wearing surface; No. 6 for steels having a copper content; No. 9 for high tensile strength; No. 12 for machineable welds on cast iron; No. 17 for general work; No. 20 for welding brass, bronze and light gauge copper; No. 50 for welding sheet and cast aluminum; special rods for welding stainless steels.

Samples sent on request—also bulletin describing Wilson Machines.

WILSON WELDER & METALS CO. INC., 24 WILSON BUILDING, HOBOKEN, N. J.

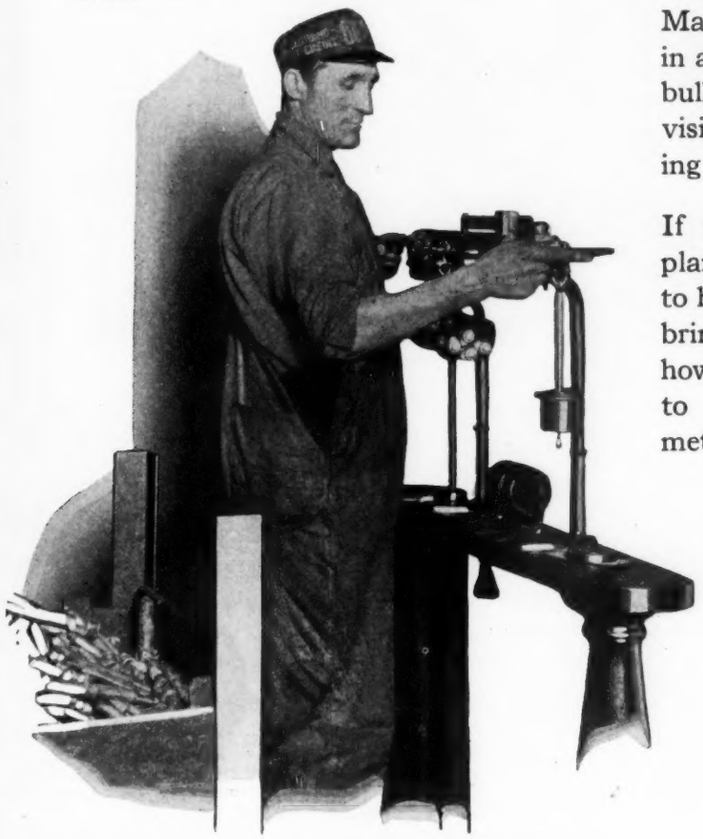
WILSON

WELDING MACHINES AND WELDING WIRE

Another Interesting And Profitable Application of National Counting and Weighing Machines

AT the Malleable Iron Fitting Co., Branford, Conn., a National Counting and Weighing Machine is used to determine the piece-rate wage of molders.

The entire foundry output, ranging from small street els to larger size fittings, is counted on a standard dormant model "National".



One man and a low-rate helper are now counting and weighing 20 tons of these pieces every day. The same work formerly required the entire time of four men. The total saving is $1708.20 yearly on labor alone.

The exclusive, automatic operation of the National Counting and Weighing Machine, makes similar savings possible in almost any plant. It counts parts in bulk instantly and accurately, giving a visible record of the total on the counting bar.

If you count parts or pieces in your plant, ranging from watch springs or pills to heavy forgings, the coupon below will bring you complete information showing how you can cut your counting costs 50 to 90% by this improved, automatic method.

NATIONAL SCALE CORPORATION

Chicopee Falls, Massachusetts

Makers of National Counting Machines
National Elevating Trucks
National Scale Elevating Trucks
National Calling System
and National Adjustable Steel Shelving

Clip and Mail

NATIONAL SCALE CORP.
Chicopee Falls, Mass. I 69

[ ]Would like Catalog of Counting Machines and list of users.

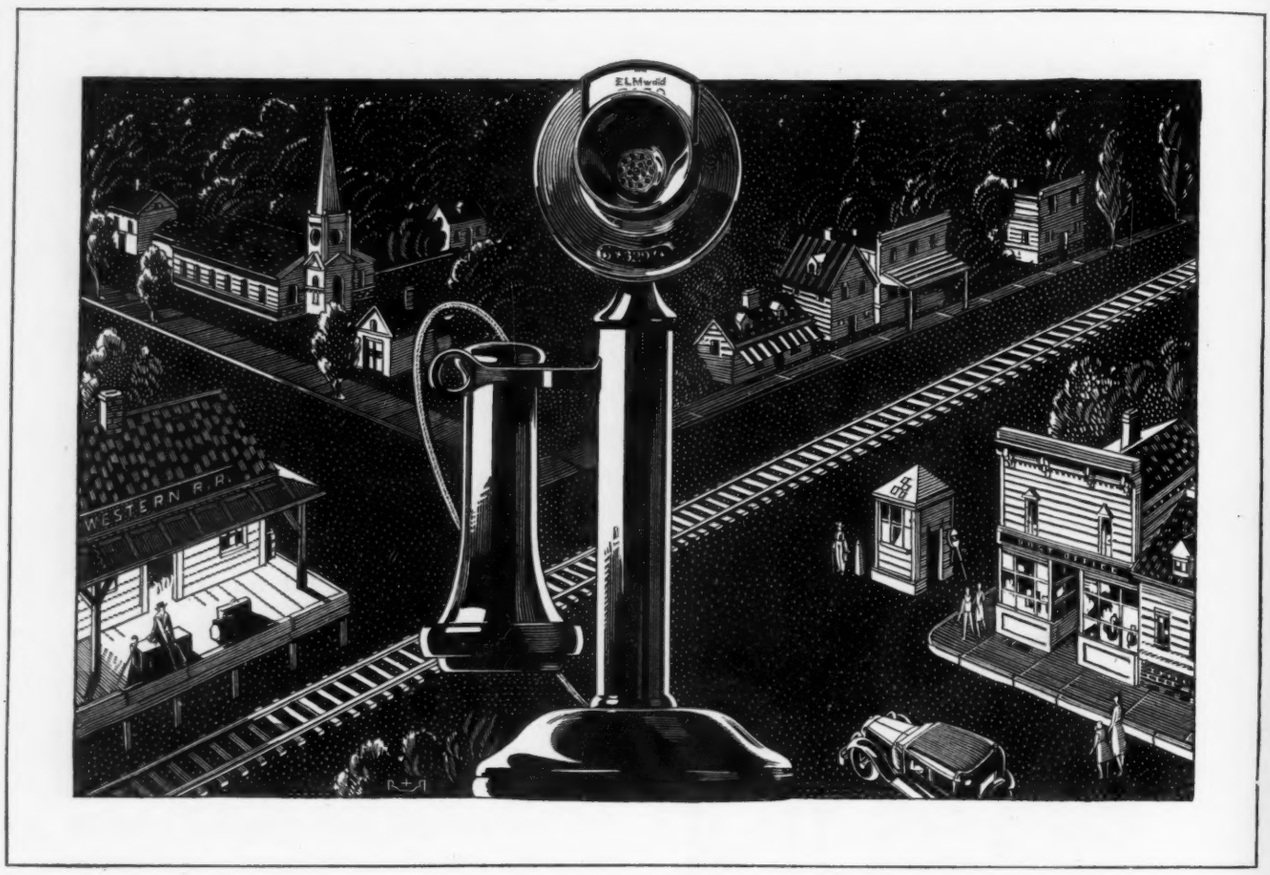
[ ] Also Interested in Elevating Trucks for factory use.

Firm .....

Name .....

Address .....

Stranded in a Small town . . .
He kept both Engagements by Telephone



A PLANT superintendent of a large tire company was on a business trip in Canada. He missed his connection and was stranded in a town with one train a day. Two important engagements loomed ahead—one in Toronto, the other in New York. He thought of the telephone. He called the two cities. He completed his business so satisfactorily in both places that neither of the trips was necessary.

The telephone is always ready to put important things through. A man in St. Louis was too busy to go to Memphis and back. He made the round trip by telephone. It resulted in $1400 worth of business.

A Seattle lumber company received a carload order on condition that it could be shipped in five days. Special items had to be cut. A telephone call to Portland, costing $1.15, found a mill that could do the work. The car was shipped in time.

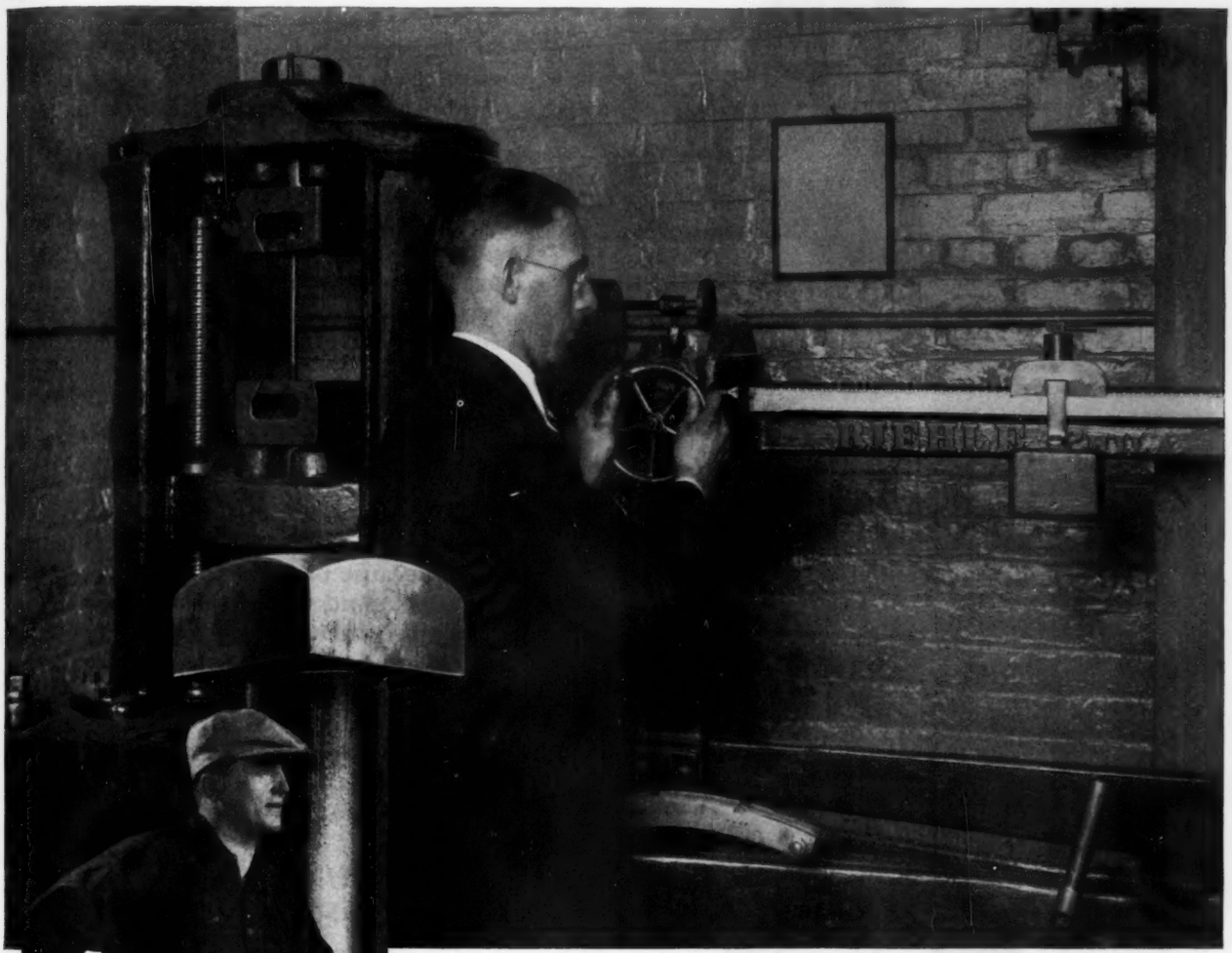
A Minnesota commission house invested $43.60 in nine Long Distance calls to five cities and sold 60 carloads—$24,840 worth—of potatoes.

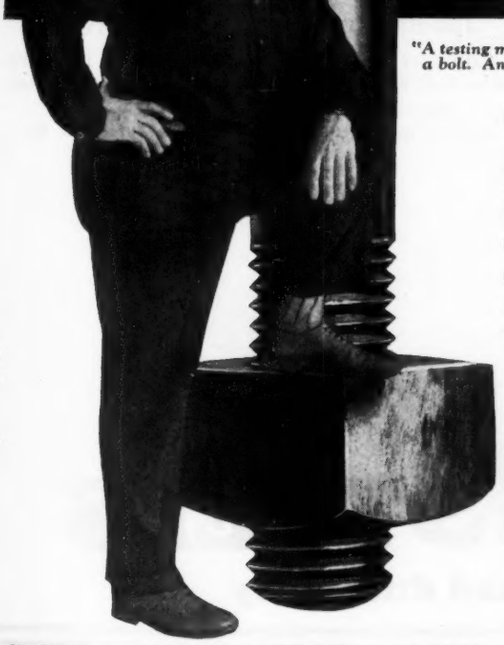
What delay, worry or expense could you save today? Is there a misunderstanding to be adjusted, an important sale or purchase hanging fire? Calls are cheap.

Typical station to station day rates: Chicago to South Bend, 60c. Peoria to St. Louis, 90c. Cleveland to Philadelphia, $1.60. Pittsburgh to St. Louis, $2.35. Boston to Chicago, $3.25.

Out of town calling is quick and calling by number takes even less time. Bell Telephone Service. *Quick. Inexpensive. Universal.*

"... made to highest practical standards"





"A testing machine never apologizes for what it does to a bolt. And a Lake Erie bolt never needs an apology."

TENSILE strength of Lake Erie bolts is under scientific control at every step in their making. From the laboratory where metallurgists test the steel, through the heat treating under exact automatic electric control, down to the final destruction test on this Testing Machine, the life of Lake Erie bolts is pre-determined. Amazing records of Lake Erie bolts in actual use are not surprising to the men who make them.

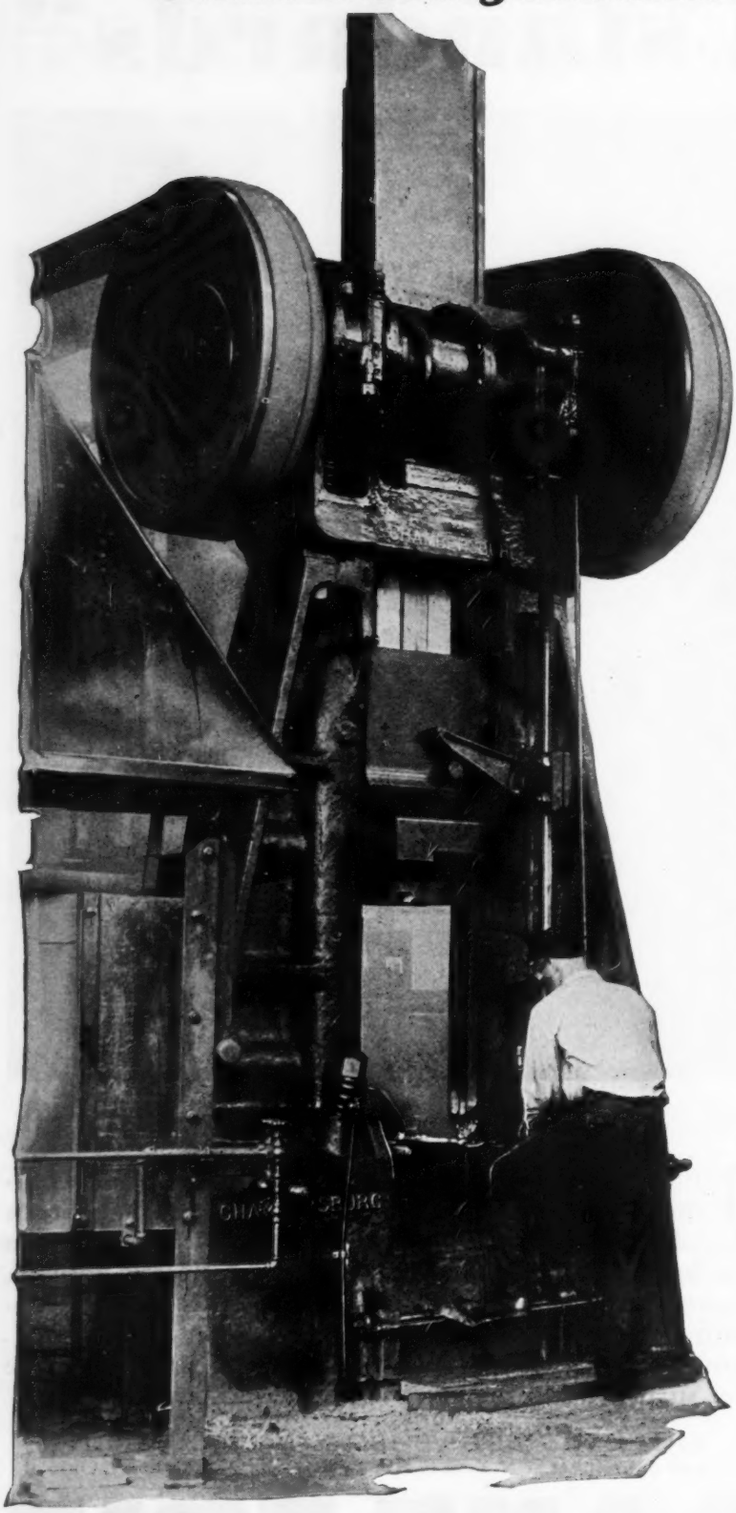
THE LAKE ERIE BOLT & NUT COMPANY
East 63rd Street at N.Y.C.R.R. Cleveland, Ohio

LAKE ERIE BOLTS AND NUTS

NEW YORK Grand Central Terminal Bldg. | CHICAGO Peoples Gas Building | DETROIT McKerchey Building | ATLANTA Norris Building | PHILADELPHIA Guaranty Industrial Building | SALT LAKE CITY Scott Building | EL PASO Martin Building | DENVER 502 Bank Block | SAN FRANCISCO Hunter Dulin Building

In Shafting Subject to Shocks and Strains

Chambersburg Hammers Have Vanadium Steel



IN designing the Chambersburg Model H Board Drop Hammer, the Chambersburg Engineering Company sought to improve the construction of the Hammer, thus reducing breakage of parts, minimizing accident hazards and increasing forging production.

"Naturally," writes Chambersburg, "in building the Model H Board Drop Hammer as a break-proof tool, we have used great care in selecting the materials entering the construction. Therefore, for such important parts as roll shafts and bolts—all subjected to shocks and strains—we have specified ELASTUF Type A Chrome-Vanadium Steel, furnished by Horace T. Potts & Co., Philadelphia."

For the highly-stressed parts of industrial equipment, Chrome-Vanadium Steel is ideal because of its high useful strength, great toughness and unusual durability. If you are interested in stronger, tougher and more dependable steels for the vital parts of your products, or for use in dies and tools employed in manufacturing operations, our Metallurgists will be glad to send you complete data on Vanadium Steels. Write us.

VANADIUM CORPORATION OF AMERICA

120 BROADWAY, NEW YORK, N. Y.

CHICAGO	PITTSBURGH	DETROIT
Straus Building	*Oliver Building*	*Book Tower*

Plants at Bridgeville, Pa., and Niagara Falls, N. Y.
Research and Development Laboratories at Bridgeville, Pa.

CHAMBERSBURG
SINCE-1897

VANADIUM STEELS

for strength, toughness and durability

A Sensational Lubricant for a Sensational Job

Every hundred feet of one inch wire rope has 334 sq. ft. of bearing surface! That is more than many of the largest hoisting engines—and the operating conditions are far more severe. Long life and safety are entirely questions of lubrication. The use of *any* black oil or heavy grease won't do. This is a sensational lubricating job and there is a lubricant specifically fitted for it. Texaco Crater Compound is a sensational lubricant.

Try Texaco Crater Compound on the next hoisting rope you put into service. Compare the record of this rope with that of any wire rope in similar service using other lubricants. You'll see why Texaco Crater Compound is so highly recommended by wire rope manufacturers and preferred by users.

Texaco Crater Compound has the fluidity and penetration to work between every strand. It saturates the core. It has the body to stand the pressures and it *adheres.*

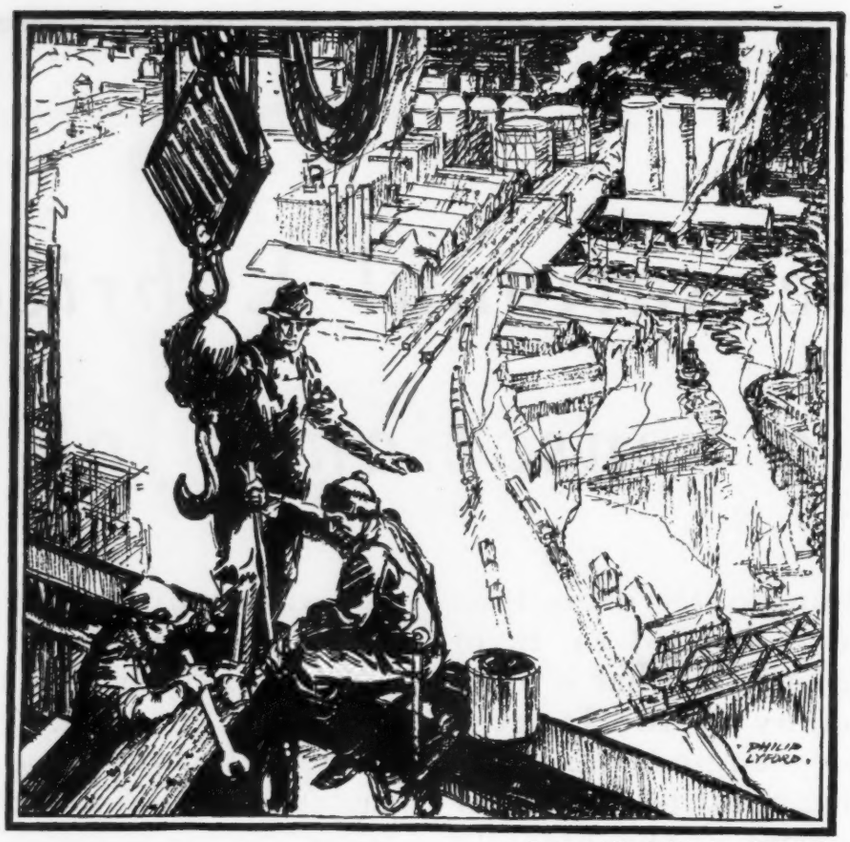
Send for a Texaco Lubrication Engineer. Ask him about Texaco Crater Compound and its application. There is a Texaco Lubricant for Every Purpose.

TEXACO LUBRICANTS

THE TEXAS COMPANY
17 Battery Place
NEW YORK CITY

TEXACO

Offices in all
Principal Cities



Courtesy Illinois Merchants' Trust Co.

Steel for Every Industrial Need

More Than 10,000 Products in Stock

For more than eighty-five years Ryerson Steel-Service has stood for immediate shipment of everything in Iron and Steel.

No order is too small to receive personal attention nor too large for prompt shipment.

There is no uncertainty or delay—no costly waiting. When you purchase steel from one of the eight Ryerson Steel-Service plants you can depend upon quick action. A 'phone call, wire or letter will start the steel on its way.

The Ryerson Journal and Stock List is the "key" to these large stocks. Make it your guide in buying steel. Write for the current copy.

Bars	Strip Steel	Rivets	Firmtread Plates	Welding Rod	Ascoloy
Shapes	Refined Iron	Wire	Billets	Boiler Tubes	Tool Steel
Structurals	Plates	Chain	Turnbuckles	Allegheny Metal	Small Tools
Rails	Sheets	Reinforcing Steel	Babbitt Metal	Alloy Steel	Machinery, etc.

JOSEPH T. RYERSON & SON INC.

Established 1842

Plants: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Jersey City
Representation in: Minneapolis, Tulsa, Kansas City, Houston, Rockford, Newark, New York, Denver, Los Angeles, San Francisco

RYERSON

STEEL-SERVICE

Model 24-P ejection type press, having box 100" long, 20" wide, 42" deep. Finished bales measure 20" x 14" x 14" minimum. Can be equipped with power operated loading hopper.

LOGEMANN SCRAP METAL PRESSES

Hydraulically compressed scrap commands at all times the *best price,* and can be conveniently stored and held for favorable markets; it is easily handled; it practically eliminates corrosion; it saves much time in remelting; cars can be easily loaded to capacity.

***LOGEMANN Presses* are built in several types and sizes to suit all requirements.**

You cannot go wrong on a LOGEMANN—it's a money maker from the day it is set in operation.

PIONEERS!

LOGEMANN Scrap Metal Presses, pioneers in this industry, enjoy an enviable reputation for long life and economical operation. They are in daily use in practically every large sheet mill, stamping plant, scrap yard, and in metal-working establishments of all kinds.

Our many years of accumulated experience, and services of our Engineering Department are at the disposal of all plants accumulating metal scrap of any kind.

LOGEMANN BROTHERS COMPANY, 3126 Burleigh St., MILWAUKEE, WIS.

"Where-To-Buy"

A classified by-products list of advertisers for the convenience of readers. If you don't find what you want, write us and we will tell you where to get it. ¶Index to advertisements will give you page number of any advertisers and by referring to advertisement you can get full particulars about products.

ABRASIVES (Polishing)
Carborundum Co., The, Niagara Falls, N. Y.
Norton Co., Worcester, Mass.

ACCUMULATORS
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

ACETYLENE (Dissolved)
Air Reduction Sales Co., 342 Madison Ave., New York City.
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACETYLENE GENERATORS
Air Reduction Sales Co., 342 Madison Ave., New York City.
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

ACETYLENE IN CYLINDERS
Air Reduction Sales Co., 342 Madison Ave., New York City.
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

ADAMITE ROLLS
American Adamite Co., The, 410 Oliver Bldg., Pittsburgh, Pa.

AIR COMPRESSORS — See COMPRESSORS (Air)

ALLOYS
Driver-Harris Co., Harrison, N. J.
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM (Tubing)
Summerill Tubing Co., Bridgeport, Pa.

ALUMINUM (Vanadium)
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM BRONZE (Acid Resisting)
Duriron Co., Inc., The, Dayton, Ohio.

ANGLES, TEES, CHANNELS—See STEEL (Structural)

ANNEALING BOXES
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Petroleum Iron Works Co., The, Sharon, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.

ANVILS (Cast Steel)
West Steel Casting Co., 805 E. 70th St., Cleveland, O.

APPRAISALS
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

ARCHES (Suspended)
Detrick, M. H., Co., 140 S. Dearborn St., Chicago, Ill.

ARCHITECTS (Industrial)
Austin Co., The 16112 Euclid Ave., Cleveland, O.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., 3675 E. 78th St., Cleveland.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.

BABBITT METAL
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Williams Alloy Products Co., The, Elyria, Ohio.

BALING PRESSES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

BANDS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS AND HOOPS (Galvanized Strips)
Sharon Steel Hoop Co., Sharon, Pa.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., 71 Broadway, New York City.

BARRELS (Steel, Adjustable)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BARS (Alloy)
Central Alloy Steel Corp., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.

BARS (Concrete Reinforcing)
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.

BARS (Iron)—See IRON (Bar)

BARS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Pacific Coast Steel Co., Hunter-Dulin Bldg., San Francisco.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Timken Roller Bearing Co., The, Canton, O.
Youngstown Sheet & Tube Co., Youngstown, O.

BEAMS, CHANNELS, ANGLES ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Phoenix Iron Co., The, 20 So. 15th, Philadelphia, Pa.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.

BEARING METAL
Williams Alloy Products Co., The, Elyria, Ohio.

BEARINGS (Ball)
New Departure Mfg. Co., The, Bristol, Conn.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Journal)
Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y.
Hyatt Roller Bearing Co., Newark, N. J.
Timken Roller Bearing Co., The, Canton, O.
Williams Alloy Products Co., The, Elyria, Ohio.

BEARINGS (Motor)
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Roller)
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Roller Bearing Corp. of America, Trenton, N. J.

BEARINGS (Tapered Roller)
Williams Alloy Products Co., The, Canton, O.

BEARINGS (Thrust)
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS AND BUSHINGS (Brass and Bronze)
Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y.
Erie Bronze Co., 402 W. 19th St., Erie, Pa.
Williams Alloy Products Co., The, Elyria, Ohio.

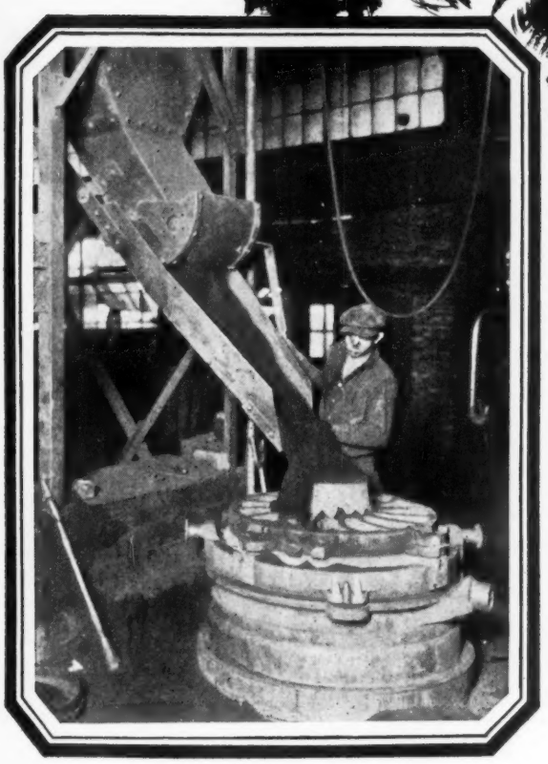
BENDING AND STRAIGHTENING MACHINES
Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, O.
Hinman, D. A., & Co., Sandwich, Ill.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.

BENZOL AND TOLUOL RECOVERY PLANTS
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.

BILLETS (Alloy and Carbon Steel)
Central Alloy Steel Corp., Massillon, O.
Washburn Wire Co., Phillipsdale, R. I.

BILLETS (Forging)
Bethlehem Steel Co., Bethlehem, Pa.
Central Alloy Steel Corp., Massillon, O.
Erie Forge Co., Erie, Pa.
Heppenstall Forge & Knife Co., 47th and Hatfield, Pittsburgh, Pa.
Midvale Co., The., Nicetown, Philadelphia, Pa.
Wood, Alan, Steel Co., Conshohocken, Pa.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above



Filling a car wheel flask
The Griffin Wheel Company
Cincinnati, Ohio

Save his strength—for craftsman's work

In an old-fashioned foundry the molder was an artisan and laborer in one. His both the wearing toil of shoveling sand and the fine-fingered work of forming molds.

That was well enough, perhaps, in a slower, calmer time; but not now! . . . not now when production must be sped to meet the sharper competition of today.

To save the molder's strength for craftsman's work is the task of Bartlett-Snow equipment. Sand-handling and conditioning units have doubled and quadrupled production. One suited to your needs will do as much for you.

Bulletin 61 pictures several installations.

THE C. O. BARTLETT & SNOW CO.
6203 Harvard Ave. Cleveland, Ohio
Representatives for the Dominion of Canada
PEACOCK BROS., Limited, Montreal

Bartlett - Snow

FOUNDRY HANDLING EQUIPMENT

BILLETS (Forging, Alloy Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BILLETS AND BLOOMS
Bethlehem Steel Co., Bethlehem, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Illinois Steel Co., 208 South La Salle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago.
Wood, Alan, Steel Co., Conshohocken, Pa.

BILLETS AND SLABS
Hausman & Wimmer Co., The, Clark Bldg., Pittsburgh, Pa.

BLAST FURNACE SPECIALTIES
Bailey, Wm. M., Co., Magee Bldg., Pittsburgh, Pa.
Brosius, Edgar E., Sharpsville P. O., Pittsburgh, Pa.

BLAST FURNACES — See FURNACES (Blast)

BLOWERS
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.
Strong, Carlisle & Hammond Co., 1392 W. 3rd St., Cleveland, Ohio.

BLOW PIPES (Brazing, Welding Cutting, Etc.)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

BOILER HEADS
Bethlehem Steel Co., Bethlehem, Pa.

BOILER SETTINGS & CHIMNEYS
Detrick, M. H., Co., 140 S. Dearborn St., Chicago, Ill.
Rust Engineering Co., 2600 Koppers Bldg., Pittsburgh.

BOILER TUBES — See TUBES (Boiler)

BOILERS
Babcock & Wilcox Co., The, 85 Liberty St., New York City.
Combustion Engineering Corp., 200 Madison Ave., New York City.

BOLT AND NUT MACHINERY
Landis Machine Co., Waynesboro, Pa.

BOLTS
Bethlehem Steel Co., Bethlehem, Pa.
Clark Bros. Bolt Co., Milldale, Conn.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Kirk-Latty Co., 1971 W. 85th St., Cleveland, O.
Lake Erie Bolt & Nut Co., 915 E. 63rd St., Cleveland, O.
Lamson & Sessions Co., The, 2188 Scranton Rd., Cleveland, O.
Neely Nut & Bolt Co., 2101 Wharton St., Pittsburgh.
Oliver Iron & Steel Corp., S. 10th and Muriel Sts., Pittsburgh.
Pittsburgh Screw & Bolt Co., Preble Ave., Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, Ohio.
Rockford Bolt Co., 220 Mill St., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.

BOOKS (Technical)
Penton Publishing Co., Cleveland, O.

BORING MILLS
Manning, Maxwell & Moore, 100 E. 42nd St., New York City.

BOXES (Carbonizing)
Driver-Harris Co., Harrison, N. J.
Farrell-Cheek Steel Foundry Co., Sandusky, O.

BOXES (Open Hearth Charging)
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.

BOXES (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BRAKES (Crane)
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland.

BRAKES (Electric)
Cutler-Hammer Mfg. Co., The, Milwaukee, Wis.
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.

BRASS
Williams & Co., Inc., 901-37 Penna Ave., Pittsburgh.

BRICK (Insulating) — See INSULATING BRICK

BRICK (Refractory)—See REFRACTORIES

BRIDGE CRANES (Ore and Coal Handling)
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

BRIDGES, BUILDINGS, VIADUCTS, STACKS (Steel)
American Bridge Co., 71 Broadway, New York City.
Belmont Iron Works, 22nd and Washington Ave., Philadelphia.
Eichleay, John, Jr., Co., S. 20th and Wharton, Pittsburgh, Pa.
McClintic-Marshall Co., Oliver Bldg., Pittsburgh, Pa.
Morgan Engineering Co., Alliance, Ohio.
Mt. Vernon Bridge Co., Mt. Vernon, Ohio.
Phoenix Bridge Co., 20 S. 15th St., Philadelphia, Pa.
Truscon Steel Co., Youngstown, Ohio.

BRONZE (Centrifugally Cast)
Shenango-Penn Mold Co., Oliver Bldg., Pittsburgh, Pa.

BRONZE (Manganese)
Bethlehem Steel Co., Bethlehem, Pa.

BUCKETS (Clam Shell, Dragline, Grab, Single Line)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh.
Brosius, Edgar E., P. O., Pittsburgh, Pa.
Harnischfeger Corp., 3811 National Ave., Milwaukee, Wis.
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland.
Owen Bucket Co., The, 6013 Breakwater Ave., Cleveland.
Milwaukee Electric Crane & Hoist Corp., 284 Seventh Ave., Milwaukee, Wis.
Williams, G. H., Co., 611 Haybarger Lane, Erie, Pa.

BUCKETS (Dumping)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.

BUCKETS (Elevator)
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

BUILDINGS (Industrial)
Austin Co., The, 16112 Euclid Ave., Cleveland, O.
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.

BUILDINGS (Steel)—See BRIDGES, BUILDINGS, VIADUCTS, STACKS (Steel)

BULLDOZERS
Beatty Machine & Mfg. Co., Hammond, Ind.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.

BURNERS (Acetylene) — See TORCHES AND BLOWERS (Acetylene, Blow, Oxy-Acetylene)

BURNERS (Automatically Regulated)
American Heat Economy Bureau, Inc., Wabash Bldg., Pittsburgh.

BURNERS (Fuel, Oil, Gas, Combination)
Babcock & Wilcox Co., 85 Liberty St., New York City.
Maehler, Paul, Co., The, 2210 West Lake St., Chicago, Ill.
Strong, Carlisle & Hammond Co., The, 1392 W. 3rd St., Cleveland.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.

BURNERS (Kerosene)
St. Paul Welding & Mfg. Co., 174 West 3rd St., St. Paul, Minn.

BY-PRODUCT PLANTS
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.

CALLING SYSTEMS
National Scale Co., Chicopee Falls, Mass.

CAN MAKING MACHINERY
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.

CAP SCREWS —See SCREWS (Cap and Set)

CARBON BURNING APPARATUS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

CAR DUMPERS
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

CARS (Industrial and Mining)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
Bethlehem Steel Co., Bethlehem, Pa.

CARS (Ingot and Open Hearth Charging)
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

CASTINGS (Acid Resisting)
Duriron Co., Inc., The, Dayton, Ohio.
Southern Manganese Steel Co., St. Louis, Mo.

CASTINGS (Acid Resisting—Brass, Bronze and Aluminum)
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.

CASTINGS—Alloy (Acid Resisting)
National Alloy Steel Co., Blawnox, Pa.

CASTINGS (Alloy Steel)
Alloy Cast Steel Co., The, Marion, Ohio.
Babcock & Wilcox Tube Co., 85 Liberty St., New York City.
Bethlehem Steel Co., Bethlehem, Pa.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Sivyer Steel Casting Co., Milwaukee, Wis.
Southern Manganese Steel Co., St. Louis, Mo.
Treadwell Engineering Co., Easton, Pa.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
Western Crucible Steel Casting Co., Minneapolis, Minn.

CASTINGS (Bessemer Iron)
Valley Mould & Iron Corp., Hubbard, Ohio.

CASTINGS (Brass, Bronze, Copper, Aluminum)
Bethlehem Steel Co., Bethlehem, Pa.
Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y.
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh.
Enterprise Brass Works, Muskegon, Mich.
Erie Bronze Co. 402 W. 19th St., Erie, Pa.
General Bronze Co., 3216 Smallman St., Pittsburgh.

CASTINGS (Die) See DIE CASTINGS

CASTINGS (Electric Flux)
Alloy Cast Steel Co., The, Marion, Ohio.

CASTINGS (Electric Steel)
American Rolling Mill Co., Middletown, O.
Crucible Steel Castings Co., The, Almira and W. 84th St., Cleveland, O.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Maynard Electric Steel Castings Co., 2-12 Kilbourn Rd., Milwaukee, Wis.
Pittsburgh Electric Furnace Corp., P. O. Box 1125, Pittsburgh, Pa.
Sivyer Steel Castings Co., Milwaukee, Wis.
West Steel Castings Co., The, 805 E. 70th St., Cleveland, O.

CASTINGS (Gray Iron)
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Cascade Foundry Co., 19th and Plum Sts., Erie, Pa.
Forest City-Walworth Run Foundries, W. 27th & Nickel Plate R. R., Cleveland, Ohio.
Lake Shore Engine Works, Marquette, Mich.
Manning, Maxwell & Moore, 100 E. 42nd St., New York City.
Midvale Co., The, Nicetown, Philadelphia, Pa.
National Roll & Foundry Co., The, Avonmore, Pa.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.
Treadwell Engineering Co., Easton, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh.

CASTINGS (Heat Resisting)
Driver-Harris Co., Harrison, N. J.
National Alloy Steel Co., Blawnox, Pa.

CASTINGS (Malleable)
Iowa Malleable Iron Co., Fairfield, Iowa.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.
Meeker Foundry Co., Clay & Ogden Sts., Newark, N. J.
Peoria Malleable Castings Co., Peoria, Ill.
Vermilion Malleable Iron Co., Hoopeston, Ill.

CASTINGS (Manganese Steel)
Alloy Cast Steel Co., The, Marion, Ohio.
American Manganese Steel Co., 1650 McCormick Bldg., Chicago.

CASTINGS (Nickel Chromium)
Alloy Cast Steel Co., The, Marion, Ohio.
Driver-Harris Co., Harrison, N. J.

CASTINGS (Steel)
Alloy Cast Steel Co., The, Marion, Ohio.
American Adamite Co., The, 410 Oliver Bldg., Pittsburgh, Pa.
American Rolling Mill Co., Middletown, O.
American Steel Foundries, 410 No. Michigan Ave., Chicago, Ill.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

BORN to the world, a unique metal

Chemical Purity

* *

Rust-resistance

* *

Enameling Properties

* *

Welding Properties

* *

Electrical Conductivity

* *

Consistent Uniformity

ARMCO INGOT IRON

A little more than two decades ago users of iron and steel sheets and plates needed a new and versatile metal. The irons and steel of that day did not possess in great enough measure the important qualities — rust resistance, workability and weldability.

So the stage was set when ARMCO Ingot Iron first saw the light over twenty years ago. There is no better example of the eternal vigilance that characterizes ARMCO service than the development of this pure iron.

ARMCO Ingot Iron has served the exacting needs of manufacturers in all lines of activity—from requirements involving the use of the light sheets to those that call for heaviest plate.

ETERNAL VIGILANCE! The unrelenting diligence and zeal which ARMCO Men put into the making of a pure, uniform, rust-resisting iron has played its part in maintaining its high standard of excellence.

THE WORLD'S LARGEST EXCLUSIVE MAKERS OF SPECIAL ANALYSIS IRON AND STEEL SHEETS AND PLATES

THE AMERICAN ROLLING MILL COMPANY

Executive Offices, Middletown, Ohio

Export: The ARMCO International Corporation Cable Address—ARMCO, Middletown (O)

DISTRICT OFFICES

Chicago, Cincinnati, Cleveland, Detroit, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco

ARMCO INGOT IRON RESISTS RUST

CASTINGS (Steel)—Cont.
Atlas Steel Casting Co., 1963 Elmwood Ave., Buffalo, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Columbia Steel Corp., San Francisco, Calif.
Commercial Steel Castings Co., The, Marion, O.
Crucible Steel Castings Co., The, Almira and W. 84th St., Cleveland, O.
Erie Forge Co., Erie, Pa.
Farrell Cheek Steel Foundry Co., Sandusky, O.
Mackintosh-Hemphill Co., 12th & Etna Sts., Pittsburgh, Pa.
Maynard Electric Steel Castings Co., 2-12 Kilbourn Rd., Milwaukee.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
National Roll & Foundry Co., The, Avonmore, Pa.
Reliance Steel Casting Co., 28th & Smallman Sts., Pittsburgh,
Sharon Foundry Co., Sharon, Pa.
Sivyer Steel Casting Co., Milwaukee, Wis.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.
Treadwell Engineering Co., Easton, Pa.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh.
West Steel Castings Co., The, 805 E. 70th St., Cleveland, O.

CASTINGS (Worm & Gear Bronze)
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.

CASTORS (Plate Mills)—See PLATE CASTORS

CEMENT (High Temperature)
Carborundum Co., The, Perth Amboy, N. J.
General Refractories Co., 106 S. 16th St., Philadelphia, Pa.
Harbison-Walker Refractories Co., Farmers Bk. Bldg., Pittsburgh.
North American Refractories Co., 1012 National City Bank, Cleveland, Ohio.

CEMENT MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

CENTRAL STATION EQUIPMENT
Westingnouse Electric & Mfg. Co., E. Pittsburgh, Pa.

CHAIN-MAKING MACHINERY
Nilson, A. H., Machine Co., Bridgeport, Conn.

CHAINS (For Drives, Conveyors & Elevators)
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.

CHARCOAL
Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh, Pa.

CHARGING MACHINES (Cupola)
Shepard-Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

CHEMICALS
Ford, The J. B., Co., Wyandotte, Mich.
Vanadium Corp. of America, 120 Broadway, New York City.

CHROME ORE
General Refractories Co., 106 S. 16th St., Philadelphia, Pa.
Harbison-Walker Refractories Co., Farmers Bk. Bldg., Pittsburgh.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

CHROMIUM METAL
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.

CHUCKING MACHINES (Automatic, Multiple Spindle)
National Acme Co., E. 131st St. and Coit Rd., Cleveland, O.

CLAY GUNS (Electric)
Bailey, Wm. M., Co., Magee Bldg., Pittsburgh, Pa.

CLEANERS (Metal)—See METAL CLEANERS

CLEANING SPECIALTIES
American Chemical Paint Co., Ambler, Pa.
Ford, The J. B., Co., Wyandotte, Mich.

CLUTCHES
Johnson, Carlyle, Machine Co., The, Manchester, Conn.

CLUTCHES (Cut-Off Coupling)
Johnson, Carlyle, Machine Co., The, Manchester, Conn.

CLUTCHES (Friction)
Johnson, Carlyle, Machine Co., The, Manchester, Conn.

COAL AND COKE
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Eaton, Rhodes & Co., First National Bank Bldg., Cincinnati, O.
Hanna, M. A., The, Co., Leader Bldg., Cleveland, O.
Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh, Pa.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.
Snyder, W. P., Co., Oliver Bldg., Pittsburgh, Pa.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.

COAL CRUSHERS AND PULVERIZERS
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.

COAL, ORE and ASH HANDLING MACHINERY
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland, O.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.
Webster Mfg. Co., 1856 No. Kostner Ave., Chicago, Ill.

COKE—See COAL AND COKE

COKE OVENS (By-Product)
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh, Pa.

COKE OVEN MACHINERY
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

COKE QUENCHING SYSTEMS
Dry Quenching Equipment Corp., 200 Madison Ave., New York City.

COLLET CHUCKS
Tomkins-Johnson Co., The, 617 N. Mechanic St., Jackson, Mich.

COMPENSATORS (Automatic)
Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland, O.

COMPOUNDS (Metal Cleaning)
Parkin, Wm. M., Co., 1005 Highland Bldg., Pittsburgh, Pa.

COMPOUNDS (Pickling)
Parkin, Wm. M., Co., 1005 Highland Bldg., Pittsburgh, Pa.

COMPRESSORS (Air)
Allis-Chalmers Mfg. Co. Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Independent Pneumatic Tool Co., 228 So. Jefferson St., Chicago, Ill.
Ingersoll-Rand Co., 11 Broadway, New York City.
Sullivan Machinery Co., 820 Wrigley Bldg., Chicago.

COMPRESSORS (Portable)
Independent Pneumatic Tool Co., 228 So. Jefferson St., Chicago, Ill.
Ingersoll-Rand Co., 11 Broadway, New York City.

CONCRETE MIXERS—See MIXERS (Concrete)

CONCRETE REINFORCING BARS—See BARS (Concrete Reinforcing)

CONDENSERS (Surface, Barometric, Multi-Jet)
Ingersoll-Rand Co., 11 Broadway, New York City.

CONDUITS (Electric)
Youngstown Sheet & Tube Co., Youngstown, O.

CONNECTING RODS
Transue & Williams Steel Forging Corp., Alliance, Ohio.

CONSTRUCTION (Industrial Buildings)
Austin Co., The, 16112 Euclid Ave., Cleveland, O.

CONTRACTORS—See ENGINEERS AND CONTRACTORS

CONTROLLERS (Automatic)
Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland.

CONTROLLERS (Electric)
Cutler-Hammer Mfg. Co., The, Milwaukee, Wis.
Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland, O.

CONVEYORS (Elevating and Conveying)
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland, O.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.

COTTER PINS
Hindley Mfg. Co., John St., Valley Falls, R. I.

COTTERS
Kirk-Latty Co., 1971 W. 85th St., Cleveland, O.
Lamson & Sessions Co., The, 2188 Scranton Rd., Cleveland, O.

COUNTING MACHINES
Veeder-Root, Inc., Hartford, Conn.

COUPLINGS (Flexible)
Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland, O.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.

COUPLINGS (Tube)
Parker Appliance Co., The, 10320 Berea Rd., Cleveland, Ohio.

CRANES
Bedford Foundry & Machine Co., Bedford, Ind.
Conkey, H. D., Co., Mendota, Ill.
Cyclops Iron Works, 837 Folsom St., San Francisco, Calif.
Shepard-Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

CRANES (Charging)
Alliance Machine Co., The, Alliance, O.
Morgan Engineering Co., Alliance, O.

CRANES (Creeper, Erection)
Harnischfeger Corp., 3811 National Ave., Milwaukee, Wis.
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland, O.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.

CRANES (Electric)
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Northern Engineering Works, 210 Chene St., Detroit, Mich.

CRANES (Electric Traveling)
Alliance Machine Co., The, Alliance, O.
Box Crane & Hoist Corp., Janney & E. Ontario Sts., Philadelphia.
Cleveland Crane & Engrg. Co., The, Wickliffe, O.
Harnischfeger Corp., 3811 National Ave., Milwaukee, Wis.
Milwaukee Electric Crane & Hoist Corp., 284 7th Ave., Milwaukee, Wis.
Morgan Engineering Co., The, Alliance, O.
Northern Engineering Works, 210 Chene St., Detroit, Mich.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.
Shepard-Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

CRANES (Gantry)
Bedford Foundry & Machine Co., Bedford, Ind.
Cleveland Crane & Engineering Co., The, Wickliffe, O.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Shepard-Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

CRANES (Hand)
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.

CRANES (Hand Traveling)
Box Crane & Hoist Corp., Janney and E. Ontario Sts., Philadelphia.
Milwaukee Electric Crane & Hoist Corp., 284 7th Ave., Milwaukee, Wis.

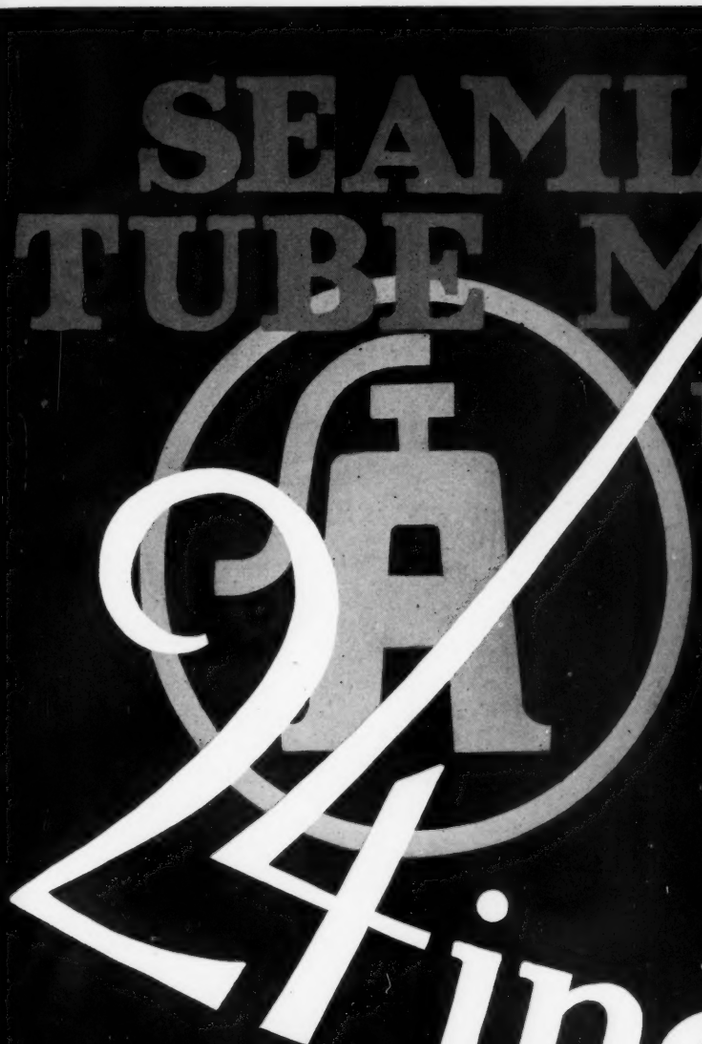
CRANES (Hydraulic)
Alliance Machine Co., The, Alliance, O.

CRANES (Jib)
Box Crane & Hoist Corp., Janney & E. Ontario Sts., Philadelphia.
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.

CRANES (Locomotive)
Harnischfeger Corp., 3811 National Ave., Milwaukee, Wis.
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland, O.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

SEAMLESS TUBE MILLS



up to 24 inches

Products

- Tube and Pipe Mills
- Tin, Strip and Sheet Mills
- Bar Mills
- Pipe Threading and Cutting Machinery
- Draw Benches
- Rolls—Sand, Chilled and ASEX Special

From the inception of the Seamless Tube idea to its present, practical state of actual production, Aetna-Standard Engineers have been for more than thirty years the outstanding pioneers and developers of this equipment.

If you have a Seamless Tube Mill in mind—no matter how far in the future—the value of authentic information and suggestions from recognized leaders in the achievements of this modern industry is open to you. Aetna-Standard is interested in your plans and is ready to answer your questions.

The AETNA-STANDARD
ENGINEERING COMPANY · YOUNGSTOWN · OHIO
DESIGNERS AND BUILDERS OF ROLLING MILL MACHINERY

CRANES (Overhead)
Milwaukee Electric Crane & Hoist Corp., 284 7th Ave., Milwaukee, Wis.

CRANES (Portable)
Beatty Machine & Mfg. Co., Hammond, Ind.

CRANK SHAFTS
Champion Machine & Forging Co., 3675 E. 78th St., Cleveland.
Transue & Williams Steel Forging Corp., Alliance, O.

CRUCIBLES
Dixon, Joseph, Crucible Co., Jersey City, N. J.

CRUSHING, GRINDING AND PULVERIZING MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Fuller Lehigh Co., Fullerton, Pa.
Morgan Engineering Co., Alliance, O.

CUPRO-VANADIUM
Vanadium Corp. of America, 120 Broadway, New York City.

CUTTING AND WELDING (Oxy-Acetylene Process)—See WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)

CUTTING AND WELDING APPARATUS—See WELDING AND CUTTING APPARATUS (Electric Arc)

CUTTING OILS
Sun Oil Co., Finance Bldg., Philadelphia, Pa.

CYLINDERS (Acetylene) — See ACETYLENE IN CYLINDERS

CYLINDERS (Oxygen) See OXYGEN IN CYLINDERS

CYLINDERS (Pressure)
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Scaife, Wm. B., & Sons Co., Oakmont, Pa.

DECARBONIZING APPARATUS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

DEOXIDIZERS
Titanium Alloy Mfg. Co., The, Niagara Falls, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

DERRICKS
American Terry Derrick Co., South Kearney, N. J.

DIE BLOCKS
Bethlehem Steel Co., Bethlehem, Pa.
Heppenstall Forge & Knife Co., 47th and Hatfield, Pittsburgh, Pa.

DIE CASTINGS
Newton Die Casting Corp., 146 Munson St., New Haven, Conn.
Stewart Die Casting Corp., 4535 Fullerton Ave., Chicago, Ill.

DIE HEADS (Automatic)
Landis Machine Co., Waynesboro, Pa.
National Acme Co., E. 131st St. and Colt Rd., Cleveland.

DIE SINKING MILL CUTTERS
Tomkins-Johnson Co., The, 617 N. Mechanic St., Jackson, Mich.

DIE STEEL
Heppenstall Forge & Knife Co., 47th and Hatfield, Pittsburgh.

DIES
Bethlehem Steel Co., Bethlehem, Pa.
Niagara Machine & Tool Works, 685 Northland Ave., Buffalo.
Toledo Machine & Tool Co., Toledo, O.

DOLOMITE MACHINES (Back Wall)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.

DOORS AND SHUTTERS (Steel, Fire and Rolling)
Kinnear Mfg. Co., 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.
Truscon Steel Co. (Hydraulic Pressed Steel Division), Youngstown, O.

DRAW BENCHES
Aetna-Standard Engineering Co., The, Youngstown, O.
Vaughn Machinery Corp., Cuyahoga Falls, O.

DRILLING MACHINES (Vertical and Gang)
Barnes Drill Co., Rockford, Ill.

DRILL RODS—See RODS (Drill)

DRILLS (Electric)
Independent Pneumatic Tool Co., 228 So. Jefferson St., Chicago.

DRILLS (Pneumatic)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, C.
Independent Pneumatic Tool Co., 228 So. Jefferson St., Chicago.
Ingersoll-Rand Co., 11 Broadway, New York City.

DRILLS (Rock)
Ingersoll-Rand Co., 11 Broadway, New York City.

DRIVES (Cut Herringbone Gears)
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.
Lewis Foundry & Machine Co., Pittsburgh, Pa.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.

DRYERS (Paint, Varnish, Enamel, Chemical)
Maehler, Paul, Co., The, 2210 West Lake St., Chicago, Ill.

DRYERS (Sand, Coal, Ores, Chemical, Etc.)
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.

DUST COLLECTING EQUIPMENT
Pangborn Corp., P. O. Box 858, Hagerstown, Md.

ECONOMIZERS
Babcock & Wilcox Co., 85 Liberty St., New York City.

ELECTRICAL EQUIPMENT
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.

ELECTRIC TOOLS (Portable)—See TOOLS (Portable Electric)

ELEVATING AND CONVEYING MACHINERY — See CONVEYORS (Elevating and Conveying)

ELEVATORS (Bucket)
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Link-Belt Co., 300 W. Pershing Road, Chicago.

ENGINE LATHES—See LATHES (Engine)

ENGINEERS AND CONTRACTORS
Austin Co., The, 16112 Euclid Ave., Cleveland, O.
Brassert, H. A., & Co., 310 So. Michigan Ave., Chicago, Ill.
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh.
Kennedy, Julian, Bessemer Bldg., Pittsburgh, Pa.
Laughlin, Alex, & Co., First National Bank Bldg., Pittsburgh.
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Pennsylvania Engineering Works, New Castle, Pa.
Phoenix Bridge Co., 20 South 15th St., Philadelphia, Pa.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.
Swindell, Wm., & Bros., P. O. Box 1753, Pittsburgh, Pa.

ENGINEERS (Consulting)
Austin Co., The, 16112 Euclid Ave., Cleveland, O.
Brassert, H. A., & Co., 310 So. Michigan Ave., Chicago, Ill.
Freyn Engineering Co., 310 S. Michigan Ave., Chicago.
Kennedy, Julian, Bessemer Bldg., Pittsburgh, Pa.
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Perin & Marshall, 11 West 42nd St., New York City.
Riehle Bros. Testing Machine Co., 1424 N. 9th St., Philadelphia.
Shover, Barton R., Oliver Bldg., Pittsburgh, Pa.
Townsend, Earl D., Federal Title & Trust Bldg., Beaver Falls, Pa.

ENGINEERS, CONSULTING (By-Product Coke Oven and Gas Plants)
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.

ENGINES (Gas, Oil)
Ingersoll-Rand Co., 11 Broadway, New York City.

FACING BLOCKS
Mummert Dixon Co., Hanover, Pa.

FACTORY AND INDUSTRIAL BUILDINGS — See BRIDGES, BUILDINGS, VIADUCTS, STACKS (Steel)

FACTORY EQUIPMENT (Steel)—See STOOLS AND FACTORY EQUIPMENT (Steel)

FANS (Portable)
Perkins, B. F., & Son, Inc., Holyoke, Mass.

FERROALLOYS
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Vanadium Corp. of America, 120 Broadway, New York City.

FERROCARBON TITANIUM
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

FERROCHROME
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.

FERROMANGANESE
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia.
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

FERROPHOSPHORUS
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.

FERROSILICON
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Globe Iron Co., Jackson, Mich.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.
Vanadium Corp. of America, 120 Broadway, New York City.

FERROVANADIUM
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Vanadium Corp. of America, 120 Broadway, New York City.

FERRULES
Bay State Stamping Co., 380 Chandler St., Worcester, Mass.

FIRE BRICK
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.

FIRE CLAY
Babcock & Wilcox Co., 85 Liberty St., New York City.
Climax Fire Brick Co., Climax, Pa.
Eureka Fire Brick Works, First National Bank Bldg., Pittsburgh, Pa.
General Refractories Co., 106 E. 16th St., Philadelphia, Pa.
Harbison-Walker Refractories Co., Farmers Bank Bldg., Pittsburgh.
Kier Fire Brick Co., Oliver Bldg., Pittsburgh, Pa.
Laclede-Christy Clay Products Co., Ambassador Bldg., St. Louis, Mo.
North American Refractories Co., 1012 National City Bank, Cleveland, Ohio.
Stowe Fuller Refractories Co., 1650 Union Trust Bldg., Cleveland.
Taylor, Chas., Sons Co., The, Burns St., Cincinnati, Ohio.
U. S. Refractories Corp., Mt. Union, Pa.

FIRE DOORS AND SHUTTERS
Kinnear Mfg. Co., The, 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

FLASKS (Foundry)
Truscon Steel Co., Youngstown, Ohio.

FLOOR ARMORING
Blaw Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.

FLOORING—STEEL (Ventilating, Nonslipping, Fireproof)
Blaw-Knox Co., 602 Farmers Bk. Bldg., Pittsburgh, Pa.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

FLOOR PLATES
See PLATES (Rolled Steel—Floor)

FLUORSPAR
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New Yor

FLUX (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New Yor

FORGING BILLETS—S... LETS (Alloy and Ca...

FORGING BILLETS... LETS (Forging)

See Index to Advertisements for Pages Containing Advertisements of Companies List...

LEWIS

Chilled and Sand

ROLLS

For Iron, Steel, Brass, Copper, Aluminum, Zinc and Nickel.

For Hot Sheets, Tin Plate and Strip.

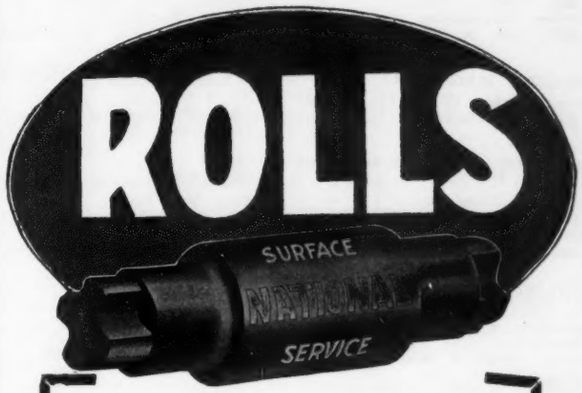
For Cold Sheets, Tin Plate and Strip.

For Merchant Barsand Rods.

Rolling Mill Equipment ***Special Machinery***

Lewis Foundry & Machine Co.
Pittsburgh, Pa.
Works at Groveton, Pa. Phone—Coraopolis 20

ROLLS



Sand - Chilled and Steel - Alloy

WHY EXPERIMENT?

USE THE BEST

The National Roll & Foundry Co.
AVONMORE, PA.

PITTSBURGH ROLLS CORPORATION

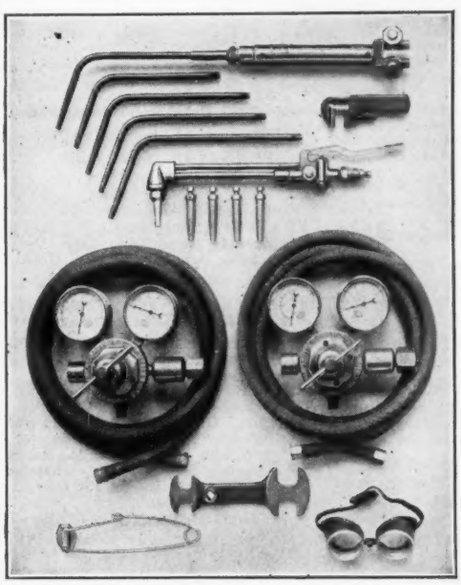
PHOENIX SAND ROLLS

PHOENIX CHILL ROLLS

PHOENIX STEEL ROLLS

PHOENIX METAL ROLLS

An Airco-Davis-Bournonville Combination Welding and Cutting Outfit No. 8888



A New Line—

Highly Efficient—

Low Priced—

AIR REDUCTION SALES COMPANY

Manufacturers and distributors of Airco Oxygen, Airco Acetylene, Airco National Carbide
Airco-Davis-Bournonville Welding and Cutting Apparatus and Welding Supplies

Baltimore	Chicago		Los Angeles	Pittsburgh
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Birmingham	Dayton		Minneapolis	Seattle
Boston	Detroit		New Orleans	St. Louis
Buffalo	Emeryville, Cal.		Oklahoma City	Wheeling
Charlotte, N. C.	Jersey City		Philadelphia	

AIRCO — DAVIS BOURNONVILLE

Home Office: 342 Madison Ave., New York City, N. Y.
85 Plants 23 District Offices

FORGING FURNACES
Chapman-Stein Co., The, Mt. Vernon, Ohio.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.

FORGING MACHINERY
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.

FORGINGS (Brass, Bronze and Copper)
American Brass Co., 25 Broadway, New York.
Storms Drop Forging Co., Springfield, Mass.

FORGINGS (Drop)
Bay City Forge Co., Erie, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Canton Forge & Axle Co., 2001-2037 Dueber Ave., Canton, O.
Champion Machine & Forging Co., 3675 E. 78th St., Cleveland, O.
Drop Forging Co. of New York, 324 West Side Ave., Jersey City, N. J.
Fruin Drop Forge Co., 341-355 West Root St., Chicago, Ill.
Heppenstall Forge & Knife Co., 47th & Hatfield Sts., Pittsburgh.
Oliver Iron & Steel Corp., S. 10th and Muriel St., Pittsburgh, Pa.
Philadelphia Steel & Iron Co., Commercial Trust Bldg., Philadelphia, Pa.
Queen City Forging Co., The, 235 Tennyson St., Cincinnati, O.
Rockford Drop Forge Co., Rockford, Ill.
Steel Car Forge Co., 410 Frick Bldg., Pittsburgh, Pa.
Storms Drop Forging Co., Springfield, Mass.
Transue & Williams Steel Forging Co., Alliance, Ohio.
Williams, J. H., & Co., 400 Vulcan St., Buffalo, N. Y.

FORGINGS (Hollow Bored)
Erie Forge Co., Erie, Pa.

FORGINGS (Iron and Steel)
Bay City Forge Co., Erie, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Drop Forging Co. of New York, 324 West Side Ave., Jersey City, N. J.
Erie Forge Co., Erie, Pa.
Heppenstall Forge & Knife Co., 47th and Hatfield, Pittsburgh.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Philadelphia Steel & Iron Co., Commercial Trust Bldg., Philadelphia, Pa.
Pittsburgh Forge & Iron Co., 801 Chamber of Commerce Bldg., Pittsburgh, Pa.
Rockford Drop Forge Co., Rockford, Ill.
Steel Car Forge Co., 410 Frick Bldg., Pittsburgh, Pa.
Transue & Williams Steel Forging Corp., Alliance, O.
Williams, J. H., & Co., 400 Vulcan St., Buffalo, N. Y.

FORGINGS (Upset)
Neely Nut & Bolt Co., 2101 Wharton St., Pittsburgh.

FOUR-SLIDE MACHINES
Nilson, A. H., Machine Co., Bridgeport, Conn.

FROGS AND SWITCHES
Bethlehem Steel Co., Bethlehem, Pa.

FURNACE CONTROLS (Open Hearth)
Morgan Construction Co., Worcester, Mass.

FURNACE INSULATION
Armstrong Cork & Insulation Co., Lancaster, Pa.

FURNACES (Blast)
Brassert, H. A., & Co., 310 So. Michigan Ave., Chicago, Ill.
Freyn Engineering Co., 310 S. Michigan Ave., Chicago.
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Mt. Vernon Bridge Co., Mt. Vernon, O.
Pollock, William B., Co., The, Youngstown, Ohio.

FURNACES (Continuous Pair)
Hagan, Geo. J., Co., Chamber of Commerce Bldg., Pittsburgh.
Strong, Carlisle & Hammond Co., 1392 West 3rd St., Cleveland.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.

FURNACES (Electric)
Electric Furnace Co., The, Wilson St. at P. R. R., Salem, Ohio.
Strong, Carlisle & Hammond Co., 1392 W. 3rd St., Cleveland, O.
Swindell, Wm., & Brothers Co., P. O. Box 1753, Pittsburgh, Pa.

FURNACES (Electric Melting)
American Bridge Co., 71 Broadway, New York City.
General Electric Co., Schenectady, N. Y.
Hagan, Geo. J., Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Pittsburgh Electric Furnace Corp., P. O. Box 1125, Pittsburgh.

FURNACES (Open-Hearth)
Criswell, James, Co., Keenan Bldg., Pittsburgh, Pa.
Incandescent Heat Co., Ltd., The, Cornwall Rd., Smethwick, Birmingham, Eng.
Laughlin, Alex, & Co., First National Bank Bldg., Pittsburgh.

FURNACES (Recuperative)
Chapman-Stein Co., The, Mt. Vernon, Ohio.
Hagan, Geo. J., Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Incandescent Heat Co., Ltd., The, Cornwall Rd., Smethwick, Birmingham, Eng.

FURNACES (Sheet and Tin Mill)
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh, Pa.
Incandescent Heat Co., Ltd., The, Cornwall Rd., Smethwick, Birmingham, Eng.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.

FURNACES (Steel Mill)
Chapman-Stein Co., Mt. Vernon, Ohio.
Morgan Construction Co., Worcester, Mass.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.

FURNACES (Steel Treating, Annealing & Case Hardening)
Carborundum Co., The, Perth Amboy, N. J.
Chapman-Stein Co., The, Mt. Vernon, Ohio.
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh, Pa.
Electric Furnace Co., The, Wilson St. at P. R. R., Salem, O.
Hagan, Geo. J., Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Rust Engineering Co., The, 2600 Koppers Bldg., Pittsburgh, Pa.
Strong, Carlisle & Hammond Co., 1392 W. 3rd St., Cleveland, O.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.

GAGES (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

GALVANIZING
Pittsburgh Electro Galvanizing Co., 5th & P. R. R., Sharpsburg, Pa.

GALVANIZING PLANTS—FOR SHEETS
Erie Foundry Co., Erie, Pa.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh

GASOLINE
Texas Co., The, 17 Battery Place, New York City.

GAS (Welding and Cutting)
Prest-O-Lite Co., Inc., The, 30 E. 42nd St., New York City.

GAS METERS—SEE METERS (Gas and Air)

GAS PRODUCER PLANTS
Flinn & Dreffein Co., 435 S. Dearborn St., Chicago, Ill.
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.
Morgan Construction Co., Worcester, Mass.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

GAS RECOVERY COKE OVEN AND GAS PLANTS
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.

GEAR BLANKS
Bethlehem Steel Co., Bethlehem, Pa.
Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y.
Edgewater Steel Co., Pittsburgh, Pa.
Transue & Williams Steel Forging Corp., Alliance, Ohio.

GEAR GENERATORS
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.

GEARS (Reverse Marine)
Johnson, Carlyle, Machine Co., The, Manchester, Conn.

GEARS AND GEAR CUTTING
American Adamite Co., The, 410 Oliver Bldg., Pittsburgh, Pa.
Chicago Gear Mfg. Co., 2827 Fulton St., Chicago, Ill.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.
Grant Gear Works, Second and B Sts., Boston, Mass.
Johnson, Carlyle, Machine Co., The, Manchester, Conn.
Mackintosh-Hemphill Co., 12th & Etna Sts., Pittsburgh, Pa.
Simonds Mfg. Co., 25th St. and Liberty Ave., Pittsburgh, Pa.

GENERATING SETS
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
General Electric Co., Schenectady, N. Y.

GENERATORS (Acetylene) — See ACETYLENE GENERATORS

GENERATORS (Electric)
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
General Electric Co., Schenectady, N. Y.
Lincoln Electric Co., The, Coit Rd. and Kirby Ave., Cleveland, O.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

GLOVES (Asbestos)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

GOGGLES (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

GRATING (Non-Slipping)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

GREASES
Dixon, Joseph, Crucible Co., Jersey City, N. J.
Texas Co., The, 17 Battery Place, New York City.

GRINDERS (Crankshaft)
Landis Tool Co., Waynesboro, Pa.

GRINDERS (Electric-Pneumatic Portable)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Ingersoll-Rand Co., 11 Broadway, New York City.

GRINDERS (Radial)
Mummert Dixon Co., Hanover, Pa.

GRINDERS (Roll)
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.
Landis Tool Co., Waynesboro, Pa.
Norton Co., Worcester, Mass.

GRINDING MACHINES
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Heald Machine Co., Worcester, Mass.
Landis Tool Co., Waynesboro, Pa.
Norton Co., Worcester, Mass.

GRINDING PANS
Phillips & McLaren Co., 24th & Smallman Sts., Pittsburgh, Pa.

GRINDING WHEELS
Carborundum Co., The, Niagara Falls, N. Y.
Norton Co., Worcester, Mass.

GUARDS (Machinery)
Breese Bros. Co., The, 2347 Reading Rd., Cincinnati, O.

HAMMERS (Air)
Nazel Engineering & Machine Works, 4100 W. 5th St., Philadelphia, Pa.

HAMMERS (Board Drop)
Erie Foundry Co., Erie, Pa.

HAMMERS (Chipping, Riveting and Calking)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Independent Pneumatic Tool Co., 228 So. Jefferson St., Chicago, Ill.
Ingersoll-Rand Co., 11 Broadway, New York City.

HAMMERS (Drop)
Bliss, E. W., Co., 53rd and 2nd Ave., Brooklyn, N. Y.
Erie Foundry Co., Erie, Pa.
Morgan Engineering Co., Alliance, Ohio.
Toledo Machine & Tool Co., Toledo, O.

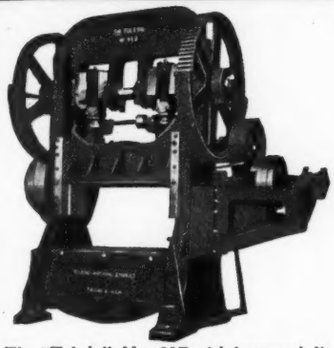
HAMMERS (Forging)
Nazel Engineering & Machine Works, 4100 W. 5th St., Philadelphia, Pa.

HAMMERS (Power)
Erie Foundry Co., Erie, Pa.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.

HAMMERS (Steam)
Erie Foundry Co., Erie, Pa.
Morgan Engineering Co., Alliance, Ohio.

HANGERS (Door)
Myers, F. E., & Brothers Co., The, Ashland, Ohio.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above



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WIRE DRAWING AND HANDLING EQUIPMENT.
FOR STEEL, COPPER AND ALLOYS.

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Special Machinery
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Gray Iron Castings
Electric Furnace Iron Castings

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AUTOMATIC GAS PRODUCERS
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HANGERS (Shaft)
Hyatt Roller Bearing Co., Newark, N. J.

HARDNESS TESTING MACHINES
Shore Instrument & Mfg. Co., Van Wyck Ave. and Carll St., Jamaica, N. Y.

HEATERS (Air)
Babcock & Wilcox Co., 85 Liberty St., New York City.

HEATERS (Electric Roll)
Freyn Engineering Co., 310 S. Michigan Ave., Chicago.

HEAT TREATING (Commercial)
Lakeside Steel Improvement Co., 5418 Lakeside Ave., Cleveland.

HOISTING MACHINERY
American Terry Derrick Co., So. Kearney, N. J.
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland, O.
Shepard-Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.
Treadwell Engineering Co., Easton, Pa.

HOISTS (Electric)
Box Crane & Hoist Corp., Janney and Ontario Sts., Philadelphia.
Cleveland Electric Tramrail Division of the Cleveland Crane & Engineering Co., Wickliffe, O.
Harnishfeger Corp., 3811 National Ave., Milwaukee, Wis.
Milwaukee Electric Crane & Hoist Corp., 284 7th Ave., Milwaukee.
Reading Chain & Block Corp., 1729 No. 10th St., Reading, Pa.
Shepard-Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

HOISTS (Monorail)
Milwaukee Electric Crane & Hoist Corp., 284 7th Ave., Milwaukee.

HOISTS (Pneumatic)
Hanna Engineering Works, 1766 Elston Ave., Chicago, Ill.
Ingersoll-Rand Co., 11Broadway, New York City.

HOISTS (Portable)
Sullivan Machinery Co., 820 Wrigley Bldg., Chicago, Ill.

HONING MACHINES
Barnes Drill Co., Rockford, Ill.

HOOPS AND BANDS
Acme Steel Co., 2840 Archer Ave., Chicago, Ill.
Ryerson, Joseph T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Sharon Steel Hoop Co., Sharon, Pa.
West Leechburg Steel Co., Farmers Bk. Bldg., Pittsburgh.

HOSE (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

HOT BEDS
Treadwell Engineering Co., Easton, Pa.

HOT BLAST STOVES
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

HYDRANTS (Fire)
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

HYDRAULIC MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bethlehem Steel Co., Bethlehem, Pa.
Morgan Engineering Co., Alliance, Ohio.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

HYDRAULIC PRESSES—See PRESSES (Hydraulic)

INGOT MOLDS
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Shenango-Penn Mold Co., Oliver Bldg., Pittsburgh, Pa.
Valley Mould & Iron Pipe Corp., Hubbard, Ohio.

INSTRUMENTS (Electric, Indicating and Recording)
General Electric Co., Schenectady, N. Y.

INSULATING BLOCK
Armstrong Cork & Insulation Co., Lancaster, Pa.

INSULATING BRICK
Armstrong Cork & Insulation Co., Lancaster, Pa.
General Insulating & Mfg. Co., Alexandria, Ind.

INSULATING POWDER AND CEMENT
Armstrong Cork & Insulation Co., Lancaster, Pa.
General Insulating & Mfg. Co., Alexandria, Ind.

INSULATION
General Insulating & Mfg. Co., Alexandria, Ind.

INSULATION (Furnace, Boiler Settings, Ovens, Steam Pipe, Etc.)
Armstrong Cork & Insulation Co., Lancaster, Pa.

IRON
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago.

IRON (Bar)
Bethlehem Steel Co., Bethlehem, Pa.
Burden Iron Co., The, Troy, N. Y.
Lockhart Iron & Steel Co., Pittsburgh, Pa.

IRON (Chain)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Penn Iron & Steel Co., Creighton, Pa.

IRON (Engine Bolt)
Bethlehem Steel Co., Bethlehem, Pa.
Penn Iron & Steel Co., Creighton, Pa.

IRON (Silvery)
Globe Iron Co., Jackson, O.

IRON Stainless)
Firth-Sterling Steel Co., McKeesport, Pa.

IRON (Staybolt)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Penn Iron & Steel Co., Creighton, Pa.

IRON ORE
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Hanna, The M. A., Co., Leader Bldg., Cleveland, O.
Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh, Pa.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Quinn, Clement K., & Co., Duluth, Minn.

KEROSENE
Texas Co., The, 17 Battery Place, New York City.

KEYS (Finished Machine)
Morton Mfg. Co., Muskegon, Mich.

KEYWAY CUTTERS (Stationary and Portable)
Morton Mfg. Co., Muskegon, Mich.

KNIVES AND SHEAR BLADES —See SHEAR BLADES AND KNIVES

LATHES
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.

LATHES (Roll Turnings)
Aetna-Standard Engineering Co., The, Youngstown, Ohio.
Lewis Foundry & Machine Co., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.

LATHES (Vertical Turret)
Bullard Co., The, Bridgeport, Conn.

LATHE DOGS
West Steel Casting Co., 805 E. 70th St., Cleveland, O.

LEAD BURNING
Lovsey, Charles H., Co., 704 Park Bldg., Pittsburgh, Pa.

LEAD BURNING APPARATUS (Oxy-Acetylene)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

LEAD POTS
Farrell-Cheek Steel Foundry Co., Sandusky, O.

LEVELING MACHINES
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.

LIFTING MAGNETS—See MAGNETS (Lifting)

LININGS (Lead for Pickling Tanks)
Lovsey, Charles H., Co., 704 Park Bldg., Pittsburgh, Pa.

LOCK WASHER MACHINERY
Sleeper & Hartley, Inc., Worcester, Mass.

LOCK WASHERS
Kantlink Manufacturers, 40 Hermon St., Newark, N. J.

LOCOMOTIVE CRANES—See CRANES (Locomotive)

LOCOMOTIVES (Electric)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
General Electric Co., Schenectady, N. Y.
Whitcomb, Geo. D., Co., Rochelle, Ill.

LOCOMOTIVES (Gasoline)
Whitcomb, Geo. D., Co., Rochelle, Ill.

LOCOMOTIVES (Storage Battery)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.

LUBRICANTS
Dixon, Joseph, Crucible Co., Jersey City, N. J.
Texas Co., The, 17 Battery Place, New York City.

LUMBER (Creosoted or Zinc Treated)
Century Wood Preserving Co., 1738 Koppers Bldg., Pittsburgh.

MACHINE WORK
Air Tight Steel Tank Co., Mansion and Gloster Sts., Pittsburgh, Pa.
Hanna Engineering Works, 1766 Elston Ave., Chicago, Ill.
Johnson, Carlyle, Machine Co., The Manchester, Conn.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.

MAGNETIC SEPARATORS—See SEPARATORS (Magnetic)

MAGNETS (Lifting)
Cutler-Hammer Mfg. Co., The, Milwaukee, Wis.
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.
Ohio Electric & Controller Co., 5900 Maurice Ave., Cleveland, O.

MAGNESITE (Dead Burned)
General Refractories Co., 106 S. 16th St., Philadelphia, Pa.
Harbison-Walker Refractories Co., Farmers Bk. Bldg., Pittsburgh.

MANGANESE METALS
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.

MANGANESE ORE
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

MANIFOLDS (Oxygen)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

MATERIAL HANDLING MACHINERY
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Weller Mfg. Co., 1856 No. Kostner Ave., Chicago.

METAL (Perforated)—See PERFORATED METAL

METAL CLEANERS
American Chemical Paint Co., Ambler, Pa.
Ford, The J. B., Co., Wyandotte, Mich.

METAL SPECIALTIES AND PARTS
Erdle Perforating Co., 171 York St., Rochester, N. Y.
Mundt, Chas., & Sons, Johnston and Fairmount Aves., Jersey City, N. J.

METAL STAMPINGS—See STAMPINGS

METAL WORKING MACHINES—See SHEET METAL WORKING MACHINERY

METALS (Nonferrous)
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

METERS (Gas and Air)
Cutler-Hammer Mfg. Co., Milwaukee, Wis.

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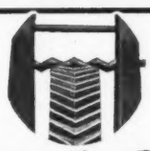

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Accurately Cut

ALL KINDS ALL MATERIALS

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NEW YORK DETROIT SAN FRANCISCO CHICAGO

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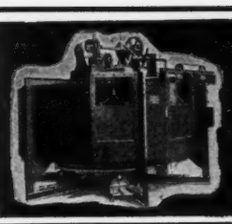
For electric melting, heat treating & annealing furnaces ~ Open hearth & crucible steel melting furnaces ~ Heating and annealing furnaces ~ Gas producers ~ Furnace reversing valves
21" to 48"
WILLIAM SWINDELL and BROTHERS
Pittsburgh, Pa.



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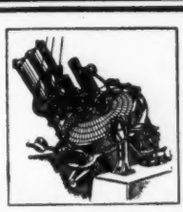

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Most Rapid and efficient for making
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P. O. Box 1125. PITTSBURGH, PA.

MILLS (Blooming, Universal, Plate, Sheet, Tin, Bar)
National Roll & Foundry Co., Avonmore, Pa.
Treadwell Engineering Co., Easton, Pa.

MINING MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

MIXING, KNEADING, TEMPERING AND PUGGING MACHINERY
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.

MOLDING MACHINES
Herman Pneumatic Machine Co., 806 Union Bank Bldg., Pittsburgh, Pa.

MOLDING MACHINES (Tractor Type Sand Throwing)
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.

MOLDS (Ingot)—See INGOT MOLDS

MONEL METAL
International Nickel Co., 67 Wall St., New York City.
Williams & Co., Inc., 901-37 Penna Ave., Pittsburgh.

MONORAIL SYSTEMS
Box Crane & Hoist Corp., Janney & E. Ontario St., Philadelphia.
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.

MOTORS (Electric)
Century Electric Co., 1806 Pine Ave., St. Louis, Mo.
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
General Electric Co., Schenectady, N. Y.
Lincoln Electric Co., The, Coit Rd. and Kirby Ave., Cleveland, O.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

MUCK BAR
Bethlehem Steel Co., Bethlehem, Pa.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

NAILS
Bethlehem Steel Co., Bethlehem, Pa.
Pittsburgh Steel Co., P. O. Box 72, Pittsburgh, Pa.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

NAILS (Coated and Galvanized
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Youngstown Sheet & Tube Co., The, Youngstown, O.

NICKEL
International Nickel Co., 67 Wall St., New York City.
Williams & Co., Inc., 901-37 Penna Ave., Pittsburgh.

NICKEL STEEL (Cold Drawn)
Bethlehem Steel Co., Bethlehem, Pa.

NITROGEN (Gas)
Linde Air Products Co., 30 E. 42nd St., New York City.

NUTS
Bethlehem Steel Co., Bethlehem, Pa.
Clark Bros. Bolt Co., Milldale, Conn.
Cleveland Cap Screw Co., The, 2921 E. 79th St., Cleveland, O.
Lake Erie Bolt & Nut Co., 915 E. 63rd St., Cleveland, O.
Neely Nut & Bolt Co., 2101 Wharton St., Pittsburgh.
Oliver Iron & Steel Corp., S. 10th and Muriel Sts., Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, O.
Rhode Island Tool Co., Providence, R. I.
Rockford Bolt Co., 220 Mill St., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.

OIL CUPS
Gits Bros. Mfg. Co., 1940 S. Kilbourne Ave., Chicago, Ill.

OILS AND GREASES
Texas Co., The, 17 Battery Place, New York City.

OPEN-HEARTH FURNACES—See FURNACES (Open Hearth)

OVENS (Coke, By-Product Recovery)
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.

OVENS (Japanning, Enameling, Lacquering, Core Baking)
Maehler, Paul, Co., The, 2210 West Lake St., Chicago, Ill.

OVENS—SPECIAL (Gas or Oil Heat)
Maehler, Paul, Co., The, 2210 West Lake St., Chicago, Ill.

OXY-ACETYLENE WELDING AND CUTTING—See WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)

OXYGEN IN CYLINDERS
Air Reduction Sales Co., 342 Madison Ave., New York City.
Linde Air Products Co., 30 E. 42nd St., New York City.

PERFORATED METAL
Chicago Perforating Co., 2445 W. 24th Place, Chicago, Ill.
Erdle Perforating Co., 171 York St., Rochester, N. Y.
Harrington & King Perforating Co., The, 5634 Fillmore St., Chicago.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Mundt, Chas., & Sons, Johnston and Fairmount Ave., Jersey City, N. J.

PICKLE ROOM EQUIPMENT
Ferro Enamel Supply Co., Keith Bldg., Cleveland, Ohio.

PICKLING COMPOUND
American Chemical Paint Co., Ambler, Pa.
Hearne, William M., Inc., Real Estate Trust Bldg., Philadelphia.

PICKLING MACHINES
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.

PICKLING TANKS
Hauser Stander Tank Co., Cincinnati, Ohio.

PIG IRON
Bethlehem Steel Co., Bethlehem, Pa.
Chateaugay Ore & Iron Co., 424 Wyoming Ave., Scranton, Pa.
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Eaton, Rhodes & Co., First National Bank Bldg., Cincinnati, O.
Globe Iron Co., Jackson, O.
Hanna, The M. A., Co., Leader Bldg., Cleveland, O.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Pilling & Co., Inc., 1500 Chestnut St., Philadelphia, Pa.
Republic Iron & Steel Co., Youngstown, O.
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.
Snyder, W. P., & Co., Oliver Bldg., Pittsburgh, Pa.
Stewart Furnace Co., 1854 Union Trust Bldg., Cleveland, O.
Valley Mould & Iron Corp., Hubbard, Ohio.
Wood, Alan, Steel Co. Conshohocken, Pa.

PIG IRON (Charcoal)
Superior Charcoal Iron Co., Grand Rapids, Mich.

PILING (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Wemlinger, Inc., 149 Broadway, New York City.

PINIONS—See GEARS AND GEAR CUTTING

PIPE (Acid Resisting)
Duriron Co., Inc., The, Dayton, O.

PIPE (Brass, Bronze and Copper)
American Brass Co., 25 Broadway, New York City.

PIPE (Seamless Steel and Seamless Iron)
Babcock & Wilcox Tube Co., 85 Liberty St., New York City.

PIPE (Steel)
Babcock & Wilcox Tube Co., 85 Liberty St., New York City.
Michigan Steel Tube Products Co., Holbrook & Buffalo Sts., Detroit, Mich.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Petroleum Iron Works Co., The, Sharon, Pa.
Pittsburgh Steel Products Co., Union Trust Bldg., Pittsburgh.
Republic Iron & Steel Co., Youngstown, O.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE (Wrought Steel)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

PIPE CUTTING AND THREADING MACHINERY
Aetna-Standard Engineering Co., The, Youngstown, O.
Landis Machine Co., Waynesboro, Pa.

PIPE FITTINGS
Pittsburgh Piping & Equipment Co., 43rd St. and A. V. R. R., Pittsburgh, Pa.

PIPE MILL MACHINERY
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

PIPE STRAIGHTENING MACHINERY
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

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PIPING CONTRACTORS
Pittsburgh Piping & Equipment Co., 43rd St., and A. V. R. R., Pittsburgh, Pa.
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Bethlehem Steel Co., Bethlehem, Pa.

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Central Iron & Steel Co., Harrisburg, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Wood, Alan, Steel Co., Conshohocken, Pa.

PLATES (Sheared and Universal)
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Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Iron & Steel Co., Harrisburg, Pa.
Granite City Steel Co., The, Granite City, Ill.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1219 Wabansia Ave., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Ryerson, Joseph T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Wood, Alan, Steel Co., Conshohocken, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

PLATES (Terne and Tin)—See TIN PLATE

PLATING (Electro)
Pittsburgh Electro Galvanizing Co., 5th and P. R. R., Pittsburgh.

PNEUMATIC TOOLS—See TOOLS—(Pneumatic)

POLE LINE HARDWARE
Oliver Iron & Steel Corp., S. 10th and Muriel, Pittsburgh.

POLES (Tubular Steel)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

PORCELAIN ENAMELING EQUIPMENT
Ferro Enamel Supply Co., Keith Bldg., Cleveland, O.

PORCELAIN ENAMELS
Ferro Enamel Supply Co., Keith Bldg., Cleveland, O.

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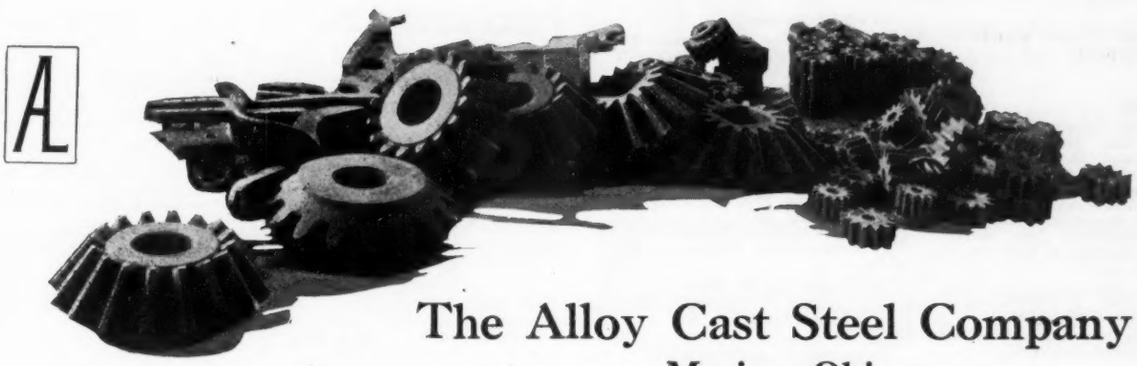

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Fuller-Lehigh Co., Fullerton, Pa.
Holbeck Engineering Co., Penton Bldg., Cleveland, Ohio.

PREHEATERS
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Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Combustion Engineering Corp., 200 Madison Ave., New York City.

PREHEATING APPARATUS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

PRESSED METAL—See STAMPINGS

PRESSED STEEL PARTS — See STAMPINGS

PRESSES
Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, O.
Erie Foundry Co., Erie, Pa.
Logeman Bros. Co., 3126 Burleigh St., Milwaukee, Wis.
Niagara Machine & Tool Works, 685 Northland Ave., Buffalo.
Toledo Machine & Tool Co., Toledo, O.

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Logemann Bros., Co., 3126 Burleigh St., Milwaukee, Wis.

PRESSES (Forging)
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Morgan Engineering Co., Alliance, O.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh.

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Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Morgan Engineering Co., Alliance, O.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

PRESSES (Metal Drawing, Etc.)
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.

PRESSES (Scrap Bundling and Baling)
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

PRESSES (Straightening)
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh.

PRODUCER GAS SYSTEMS—See GAS PRODUCER PLANTS

PULVERIZING, CRUSHING & GRINDING MACHINERY — See CRUSHING, GRINDING & PULVERIZING MACHINERY

PUMPS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

PUMPS (Acid Resisting)
Duriron Co., Inc., The, Dayton, Ohio.

PUMPS (Air Lift)
Sullivan Machinery Co., 820 Wrigley Bldg., Chicago, Ill.

PUMPS (Boiler Feed)
Ingersoll-Rand Co., (Cameron), 11 Broadway, New York City.

PUMPS (Centrifugal)
Ingersoll-Rand Co., (Cameron), 11 Broadway, New York City.

PUMPS (Hand and Power)
Myers, F. E., & Brothers Co., The, Ashland, O.

PUMPS (Hydraulic)
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

PUMPS (Steam)
Ingersoll-Rand Co., (Cameron), 11 Broadway, New York City.

PUMPS (Vacuum & Dry)
Sullivan Machinery Co., 820 Wrigley Bldg., Chicago, Ill.

PUNCHES (Multiple)
Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, O.
Thomas Spacing Machine Co., Fulton Bldg., Pittsburgh, Pa.

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Richards, I. P., Co., 21 Pemberton St., Providence, R. I.

PUNCHING AND SHEARING MACHINERY
Beatty Machine & Mfg. Co., Hammond, Ind.
Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, O.
Kent-Owens Machine Co., 958 Wall St., Toledo, O.
Long & Allstatter Co., Hamilton, O.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.
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Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh.

PYROMETERS (Recording & Indicating)
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.

RAILS
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Frank, M. K., 1204 Clark Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.

RAILS (Girder)
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REFRACTORIES
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Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.
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Harbison-Walker Refractories Co., Farmers Bk. Bldg., Pittsburgh.
Illinois Clay Products Co., 214 Barber Bldg., Joliet, Ill.
Kier Fire Brick Co., Oliver Bldg., Pittsburgh, Pa.
Laclede-Christy Clay Products Co., Ambassador Bldg., St. Louis, Mo.
Lavino, E. J., Co., Bullitt Bldg., Philadelphia, Pa.
North American Refractories Co., 1012 National City Bank, Cleveland, Ohio.
Norton Co., Worcester, Mass.
Stowe-Fuller Refractories Co., The, 1650 Union Trust Bldg., Cleveland, O.
Taylor, Chas., Sons Co., The, 715 Burns St., Cincinnati, O.
U. S. Refractories Corp., Mt. Union, Pa.

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Auer Register Co., The, 3608 Payne Ave., Cleveland, O.

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RHEOSTATS
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.

RINGS (Steel)
Edgewater Steel Co., Pittsburgh, Pa.

RINGS (Weldless)
Milwaukee Forge & Machine Co., Milwaukee, Wis.

RIVETERS (Pneumatic)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Hanna Engineering Works, 1766 Elston Ave., Chicago, Ill.

RIVETING MACHINERY
Hanna Engineering Works, 1766 Elston Ave., Chicago, Ill.
Shuster, The F. B., Co., New Haven, Conn.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

RIVET SETS
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RIVETS
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Oliver Iron & Steel Corp., S. 10th and Muriel Sts., Pittsburgh.
Progressive Mfg. Co., Torrington, Conn.
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Ryerson, Joseph T., & Son, Inc., 16th and Rockwell Sts., Chicago.

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Kidd Drawn Steel Co., Aliquippa, Pa.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Vanadium-Alloys Steel Co., Latrobe, Pa.

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Bethlehem Steel Co., Bethlehem, Pa.

RODS (Rounds, Flats & Shapes)
Washburn Wire Co., Phillipsdale, R. I.

RODS (Welding)—See WELDING RODS

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Kinnear Manufacturing Co., 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

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Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

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Alliance Machine Co., The, Alliance, O.
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Morgan Engineering Co., Alliance, O.
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United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.

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Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.

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American Adamite Co., The, 410 Oliver Bldg., Pittsburgh, Pa.
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Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Hyde Park Foundry & Machine Co., Hyde Park, Pa.
Mackintosh-Hemphill Co., 12th & Etna Sts., Pittsburgh, Pa.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Midvale Co., The Nicetown, Philadelphia, Pa.
National Roll & Foundry Co., Avonmore, Pa.
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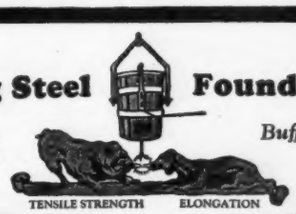

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Central Alloy Steel Corp., Massillon, Ohio.
Empire Steel Corp., Mansfield, Ohio.
Granite City Steel Co., Granite City, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Republic Iron & Steel Co., Youngstown, O.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, Ohio.

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National Tube Co., Frick Bldg., Pittsburgh, Pa.

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National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.

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Beardsley & Piper Co., The, 2541 N. Keeler Ave., Chicago, Ill.
Link-Belt Co., 300 W. Pershing Road, Chicago, Ill.
National Engineering Co., 549 W. Washington Blvd., Chicago.

SAND SLINGERS

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SAWS (High Speed Cut-Off Machines)

Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.

SAWS (Hot & Cold, Tube & Rail)

Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.

SAWS (Inserted Tooth)

Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.

SAWS (Metal Cutting Power)

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United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh.

SCALES (Computing)

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SCALES (Dial)

Buffalo Scale Co., 1200 Niagara St., Buffalo, N. Y.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.

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SCRAP BALING PRESSES

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Chicago Perforating Co., 2445 W. 24th Place, Chicago, Ill.
Erdle Perforating Co., 171 York St., Rochester, N. Y.
Harrington & King Peforating Co., 5634 Fillmore St., Chicago.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Mundt, Chas., & Sons, Johnston and Fairmount Aves., Jersey City, N. J.

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Ward's, Edgar T., Sons Co., (Div. Columbia Steel & Shafting Co.), Pittsburgh, Pa.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

SCREWS

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Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Progressive Mfg. Co., Torrington, Conn.

SCREWS (Cap, Set and Safety)

Allen Mfg. Co., Hartford, Conn.
Clark Bros. Bolt Co., Milldale, Conn.
Cleveland Cap Screw Co., The, 2921 E. 79th St., Cleveland, O.
Rhode Island Tool Co., Providence, R. I.

SCREWS (Cold Headed)

Cleveland Cap Screw Co., The, 2921 E. 79th St., Cleveland, O.

SCREWS (Lag)

Kirk-Latty Co., 1917 W. 85th St., Cleveland, O.
Lamson & Sessions Co., The, 2188 Scranton Rd., Cleveland, O.

SEAMLESS STEEL TUBING—See TUBES (Cold Drawn Seamless Steel)

SEPARATORS (Magnetic)

Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.
Ohio Electric & Controller Co., 5900 Maurice Ave., Cleveland, O.

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Union Drawn Steel Co., Beaver Falls, Pa.
Ward's, Edgar T., Sons Co., (Div. Columbia Steel & Shafting Co.), Pittsburgh, Pa.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

SHAPERS—See PLANERS AND SHAPERS

SHAPERS (Heavy Duty Draw-Cut)

Morton Mfg. Co., Muskegon, Mich.

SHAPES (Steel)—See STEEL (Structural)

SHEAR BLADES AN KNIVES

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National Roll & Foundry Co., Avonmore, Pa.
Niagara Machine & Tool Works, 685 Northland Ave., Buffalo, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago. Ill.
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Toledo Machine & Tool Co., Toledo, O.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.

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Bethlehem Steel Co., Bethlehem, Pa.
Hausman & Wimmer Co., The, Clark Bldg., Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, O.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEET METAL PRODUCTS—See STAMPINGS

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Bethlehem Steel Co., Bethlehem, Pa.
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Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Newton Steel Co., Youngstown, O.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Seneca Iron & Steel Co., P. O. Box 485, Buffalo, N. Y.
Sharon Steel Hoop Co., Sharon, Pa.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.
Weirton Steel Co., Weirton, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS (Blue Annealed)

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Columbia Steel Corp., San Francisco, Calif.
Empire Steel Corp., Mansfield, Ohio.
Granite City Steel Co., The, Granite City, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Newton Steel Co., Youngstown, O.
Ryerson, Jos T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Sharon Steel Hoop Co., Sharon, Pa.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Wood, Alan, Steel Co., Conshohocken, Pa.

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American Brass Co., 25 Broadway, New York City.

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American Rolling Mill Co., Middletown, Ohio.

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Eastern Rolling Mill Co., Baltimore, Md.
Empire Steel Corp., Mansfield, Ohio.
Granite City Steel Co., The, Granite City, Ill.
Newton Steel Co., Youngstown, O.
Republic Iron & Steel Co., Youngstown, O.
Seneca Iron & Steel Co., P. O. Box 485, Buffalo, N. Y.
Sharon Steel Hoop Co., Sharon, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

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American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Empire Steel Corp., Mansfield, Ohio.

SHEETS (Galvanized)

American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Granite City Steel Co., The, Granite City, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS (Perforated)

Erdle Perforating Co., 171 York St., Rochester, N. Y.

SHEETS (Pickled)

Seneca Iron & Steel Co., P. O. Box 485, Buffalo, N. Y.

SHEETS (Roofing)—See ROOFING AND SIDING (Corrugated and Plain)

SHEETS (Tin)—See TIN PLATE

SHEETS (Tin Mill Black)

Empire Steel Corp., Mansfield, Ohio.
Granite City Steel Co., Granite City, Ill.
Weirton Steel Co., Weirton, W. Va.

SHEETS—HIGH FINISH (Automobile, Metal Furniture, Enameling)

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American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Central Alloy Steel Corp., Massillon, Ohio.
Eastern Rolling Mill Co., Baltimore, Md.
Empire Steel Corp., Mansfield, Ohio.
Newton Steel Co., Youngstown, Ohio.
Seneca Iron & Steel Co., P. O. Box 485, Buffalo, N. Y.
Youngstown Sheet & Tube Co., Youngstown, Ohio.

SHELVING (Steel Adjustable)

Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.
National Scale Co., Chicopee Falls, Mass.

SHIPBUILDING SHAPES

Bethlehem Steel Co., Bethlehem, Pa.

SIEVES—See SCREENS & SIEVES

SILICO-MANGANESE

Vanadium Corp. of America, 120 Broadway, New York City.

SINTERING PLANTS

Greenawalt, John E., 110 E. 42nd St., New York City.

SKIP HOISTS

Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.

SLABS

Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.

SLOTTING MACHINES

Nazel Engineering & Machine Works, 4100 W. 5th St., Philadelphia, Pa.

SOAKING PIT COVERS

Detrick, M. H., Co., 140 S. Dearborn St., Chicago, Ill.

SOAKING PITS

Chapman-Stein Co., The, Mt. Vernon, Ohio.
Criswell, James, Co., Keenan Bldg., Pittsburgh, Pa.
Incandescent Heat Co., Ltd., The, Cornwall Rd., Smethwick, Birmingham, England.

SPACING TABLES

Thomas Spacing Machine Co., Fulton Bldg., Pittsburgh, Pa.

SPECIAL MACHINERY

Aetna-Standard Engineering Co., The, Youngstown, O.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bethlehem Steel Co., Bethlehem, Pa.
Lewis Foundry & Machine Co., Pittsburgh, Pa.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Morgan Engineering Co., Alliance, O.
National Roll & Foundry Co., Avonmore, Pa.
Nilson, A. H., Machine Co., Bridgeport, Conn.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.
Treadwell Engineering Co., Easton, Pa.

SPEED REDUCERS

Grant Gear Works, Second and B Sts., So. Boston, Mass.

SPIEGELEISEN

Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.

SPIKES

Bethlehem Steel Co., Bethlehem, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.

SPRING MAKING MACHINERY

Sleeper & Hartley, Inc., Worcester, Mass.

SPRINGS

Advance Spring & Wire Co., 1749 Carroll Ave., Chicago, Ill.
American Spiral Spring & Mfg. Co., Arsenal Station, Pittsburgh, Pa.
American Spring & Mfg. Co., Elm St., Holly, Mich.
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Barnes, Wallace, Co., The, Bristol, Conn.
Barnes-Gibson-Raymond, Inc., 6400 Miller Ave., Detroit, Mich.
Bethlehem Steel Co., Bethlehem, Pa.
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.
Duer Spring & Mfg. Co., Pittsburgh, Pa.
Gibson, Wm. D., Co., 1800 Clybourn Ave., Chicago, Ill.
Kokomo Spring Co., Kokomo, Ind.
Muehlhausen Spring Co., Logansport, Ind.
Peterson Spring Co., The, 1660 Beard Ave., Detroit, Mich.
Raymond Mfg. Co., Centre St., Corry, Pa.
Washburn Wire Co., Inc., 118th & Harlem River, New York.

SPRUE CUTTERS

Shuster, The F. B., Co., New Haven, Conn.

STACKS (Steel)

American Bridge Co., 71 Broadway, New York City.
Morgan Engineering Co., Alliance, O.

STAMPINGS

American Spring & Mfg. Co., Elm St., Holly, Mich.
American Tube & Stamping Plant, The, (The Stanley Works), Bridgeport, Conn.
Barnes, Wallace, Co., The, Bristol, Conn.
Bay State Stamping Co., 380 Chandler St., Worcester, Mass.
Breese Bros. Co., The, 2347 Reading Rd., Cincinnati, O.
Central Iron & Steel Co., Harrisburg, Pa.
Crosby Co., The, 183 Pratt St., Buffalo, N. Y.
General Pressed Steel Co., Newton Falls, Ohio.
Joliet Wrought Washer Co., Joliet, Ill.
Lansing Stamping Co., Lansing, Mich.
Stanley Works, The, New Britain, Conn.
Transue & Williams Steel Forging Corp., Alliance, O.
Truscon Steel Co. (Hydraulic Pressed Steel Division), Youngstown, O.

STAMPS, STEEL AND MARKING DIES

Schwerdtle Stamp Co., 39 Cannon St., Bridgeport, Conn.

STARTERS (Electric Motor)

Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.

STEAMSHIP COMPANIES (Lake Passenger & Freight)

Cleveland & Buffalo Transit Co., The, E. 9th St. Pier, Cleveland.

STEEL

Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Gulf States Steel Co., Birmingham, Ala.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago.
Kidd Drawn Steel Co., Aliquippa, Pa.
Pacific Coast Steel Co., Hunter-Dulin Bldg., San Francisco, Calif.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Superior Steel Corp., 3122 Grant Bldg., Pittsburgh, Pa.
West Leechburg Steel Co., Farmers Bank Bldg., Pittsburgh.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

STEEL (Alloy)

Babcock & Wilcox Tube Co., 85 Liberty St., New York City.
Bethlehem Steel Co., Bethlehem, Pa.
Central Alloy Steel Corp., Massillon, O.
Colonial Steel Co., Keystone Bldg., Pittsburgh, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Driver-Harris Co., Harrison, N. J.
Firth-Sterling Steel Co., McKeesport, Pa.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago.
Ludlum Steel Co., Watervliet, N. Y.
Ryerson, Jos. T., & Son, Inc. 16th and Rockwell St., Chicago, Ill.
Timken Roller Bearing Co., The, Canton, O.
Ward's, Edgar T., Sons Co., (Div. Columbia Steel & Shafting Co.), Pittsburgh, Pa.

STEEL (Alloy, Cold Drawn)

Union Drawn Steel Co., Beaver Falls, Pa.
Ward's, Edgar T., Sons Co., (Div. Columbia Steel & Shafting Co.), Pittsburgh, Pa.

STEEL (Carbon)

Bethlehem Steel Co., Bethlehem, Pa.

STEEL (Cold Drawn)

American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Globe Wire Co., Sharpsburg, Pa.
Kidd Drawn Steel Co., Aliquippa, Pa.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Superior Steel Products Co., Monaca, Pa.
Union Drawn Steel Co., Beaver Falls, Pa.
Ward's, Edgar T., Sons Co., (Div. Columbia Steel & Shafting Co.), Pittsburgh, Pa.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

STEEL (Crucible)

Colonial Steel Co., Keystone Bldg., Pittsburgh, Pa.
Firth-Sterling Steel Co., McKeesport, Pa.

STEEL (Electric)

Heppenstall Forge & Knife Co., 47th & Hatfield, Pittsburgh, Pa.
Ludlum Steel Co., Watervliet, N. Y.

STEEL (High Speed)

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Colonial Steel Co., Keystone Bldg., Pittsburgh, Pa.
Firth-Sterling Steel Co., McKeesport, Pa.
Latrobe Electric Steel Co., Latrobe, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Vanadium-Alloys Steel Co., Latrobe, Pa.

STEEL (Manganese)

American Manganese Steel Co., 1650 McCormick Bldg., Chicago, Ill.

STEEL (Open Hearth)

Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Timken Roller Bearing Co., The, Canton, O.
Washburn Wire Co., Phillipsdale, R. I.

STEEL (Open-Hearth—Cold Drawn)

Union Drawn Steel Co., Beaver Falls, Pa.
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American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Superior Steel Products Co., Monaca, Pa.

STEEL (Special Analysis)

Timken Roller Bearing Co., The, Canton, Ohio.

STEEL (Spring)

American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.

STEEL (Stainless)

Firth-Sterling Steel Co., McKeesport, Pa.

STEEL (Strip, Hot and Cold Rolled)

Acme Steel Co., 2840 Archer Ave., Chicago, Ill.
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
American Tube & Stamping Plant, The, (The Stanley Works) Bridgeport, Conn.
Central Alloy Steel Corp., Massillon, O.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Oliver Iron & Steel Corp., Morris & Bailey Div., Oliver Bldg., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th & Rockwell Sts., Chicago.
Stanley Works, The, New Britain, Conn.
Superior Steel Corp., 3122 Grant Bldg., Pittsburgh, Pa.
Weirton Steel Co., Weirton, W. Va.
West Leechburg Steel Co., Farmers Bank Bldg., Pittsburgh.

STEEL (Structural)

Alliance Structural Co., The, Alliance, O.
American Bridge Co., 71 Broadway, New York City.
Belmont Iron Works, 22nd & Washington Ave., Philadelphia.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Eichleay, John, Jr., Co., So. 20th and Wharton, Pittsburgh, Pa.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
McClintic-Marshall Co., Oliver Bldg., Pittsburgh, Pa.
Ohio Structural Steel Co., The, Newton Falls, O.
Pacific Coast Steel Co., Hunter-Dulin Bldg., San Francisco, Calif.
Phoenix Iron Co., The, 20 So. 15th St., Philadelphia, Pa.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th & Rockwell St., Chicago.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.
Truscon Steel Co., Youngstown, Ohio.

STEEL (Tool)

Bethlehem Steel Co., Bethlehem, Pa.
Carboloy Co., 350 Madison Ave., New York City.
Colonial Steel Co., Keystone Bldg., Pittsburgh, Pa.
Darwin & Milner, Inc., 1260 W. 4th St., Cleveland, O.
Firth-Sterling Steel Co., McKeesport, Pa.
Kidd Drawn Steel Co., Aliquippa, Pa.
Latrobe Electric Steel Co., Latrobe, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Ryerson, Jos. T., & Son, Inc., 16th & Rockwell Sts., Chicago.
Vanadium-Alloys Steel Co., Latrobe, Pa.

STEEL (Tungsten Carbide)

Carboloy Co., 385 Madison Ave., New York City.
Ludlum Steel Co., Watervliet, N. Y.

STEEL BUILDINGS—See BRIDGES, BUILDINGS AND VIADUCTS (Steel)

STEEL DOORS AND SHUTTERS —See DOORS & SHUTTERS (Steel, Fire & Rolling)

STEEL FABRICATORS—See BRIDGES, BUILDINGS AND VIADUCTS (Steel)

STEEL PLATE CONSTRUCTION

Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Pennsylvania Engineering Works, New Castle, Pa.
Petroleum Iron Works Co., The, Sharon, Pa.
Pollock, William B., Co., The, Youngstown, Ohio.
Riter-Conley Co., 1207 Oliver Bldg., Pittsburgh.
Steel Plate Products Co., Pottstown, Pa.

STEEL PLATES — See PLATES (Iron and Steel)

STEEL STAMPINGS—See STAMPINGS

STELLITE

Haynes Stellite Co., 30 E. 42nd St., New York City.

STEPS (Safety)

Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

STOKERS

Babcock & Wilcox Co., The, 85 Liberty St., New York City.
Combustion Engineering Corp., 200 Madison Ave., New York City.

STOOLS AND FACTORY EQUIPMENT (Steel)

Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

STRAIGHTENING MACHINERY

Logemann Bros. Co., 3126 Burleigh St., Milwaukee, Wis.
Shuster, The F. E., Co., New Haven, Conn.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.

STRIP MILLS (Hot or Cold)

Morgan Construction Co., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.

STRUCTURAL IRON AND STEEL WORK — See STEEL (Structural)

SULPHURIC ACID

Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland.

SWITCHBOARDS

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.

SWITCH STANDS

Bethlehem Steel Co., Bethlehem, Pa.

SWITCHES (Electric)

Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland.
Shepard-Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

TANKS (Special Pickling)

Nukem Products Corp., 72 Niagara St., Buffalo, N. Y.

TANKS (Storage, Pressure, Riveted, Welded)

Air Tight Steel Tank Co., Mansion and Gloster St., Pittsburgh, Pa.
Petroleum Iron Works Co., The, Sharon, Pa.
Riter-Conley Co., 1207 Oliver Bldg., Pittsburgh, Pa.
Scaife, Wm. B., & Sons Co., Oakmont, Pa.
Steel Plate Products Co., Pottstown, Pa.

TANKS—WOOD (For All Purposes)

Hauser Stander Tank Co., Cincinnati, O.

TANKS—WOOD OR STEEL (Rubber or Lead Lined)

Hauser Stander Tank Co., Cincinnati, O.
Lovsey, Charles H., Co., 704 Park Bldg., Pittsburgh, Pa.

TAPS (Collapsible)

National Acme Co., E. 131st St. & Coit Rd., Cleveland, O.

TAPS AND DIES

Landis Machine Co., Waynesboro, Pa.

TERNE PLATE—See TIN PLATE

TESTING MACHINES

Riehle Bros. Testing Machine Co., 1224 N. 9th St., Philadelphia.

THERMOCOUPLES

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y

THREAD CUTTING TOOLS

Landis Machine Co., Waynesboro, Pa.

TIE PLATES

Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.

TIES (Creosoted)

Century Wood Preserving Co., 1738 Koppers Bldg., Pittsburgh.

TIN PLATE

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Granite City Steel Co., The, Granite City, Ill.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

TIN PLATE EQUIPMENT

Aetna-Standard Engineering Co., The, Youngstown, O.

TITANIUM

Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

TOOL BITS (High Speed)

Firth-Sterling Steel Co., McKeesport, Pa.

TOOL BITS (Stellite)

Haynes-Stellite Co., 30 E. 42nd St., New York City.

TOOLS (Pneumatic)

Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Ingersoll-Rand Co., 11 Broadway, New York City.

TORCHES AND BURNERS (Acetylene, Blow, Oxy-Acetylene)

Air Reduction Sales Co., 342 Madison Ave., New York City.
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

TORCHES (Heating)

St. Paul Welding & Mfg. Co., 174 West 3rd St., St. Paul, Minn.
Williams, G. H., Co., 611 Haybarger Lane, Erie, Pa.

TOWERS (Transmission)

American Bridge Co., 71 Broadway, New York City.
Pacific Coast Steel Co., Hunter-Dulin Bldg., San Francisco.

TRAMRAILS

Cleveland Electric Tramrail, Division of the Cleveland Crane and Engineering Co., Wickliffe, O.
Harnischfeger Corp., 3811 National Ave., Milwaukee, Wis.

TREADS (Safety Stair and Ladder)—See GRATING (Non-Slipping)

TROLLEYS—

Hanna Engineering Works, 1766 Elston Ave., Chicago, Ill.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.
Shepard-Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

TRUCKS (Elevating)

National Scale Co., Chicopee Falls, Mass.

TRUCKS (Welding)

Oxweld Acetylene Co., 30 E. 42nd St., New York City.

TRUCKS AND TRACTORS (Electric Industrial)

Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.

TRUCKS & TRACTORS (Gasoline, Industrial)

Clark Tructractor Co., Battle Creek, Mich.

TUBE MILL MACHINERY

Aetna-Standard Engineering Co., The, Youngstown, O.
Mackintosh-Hemphill Co., 12th & Etna Sts., Pittsburgh, Pa.
Treadwell Engineering Co., Easton, Pa.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.

TUBES

Babcock & Wilcox Tube Co., 85 Liberty St., New York City.
Michigan Steel Tube Products Co., Holbrook and Buffalo Sts., Detroit, Mich.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Pittsburgh Steel Products Co., Union Trust Bldg., Pittsburgh.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Timken Roller Bearing Co., The, Canton, O.
Tyler Tube & Pipe Co., The, Washington, Pa.

TUBES (Alloy)

Allegheny Steel Co., Brackenridge, Pa.
Babcock & Wilcox Tube Co., 85 Liberty St., New York City.

TUBES (Boiler)

Babcock & Wilcox Tube Co., 85 Liberty St., New York.
Bethlehem Steel Co., Bethlehem, Pa.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

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Cement Plant Machinery
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Coke Oven Equipment

237 of 100 Ton capacity and over

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58		100 tons
2		115 tons
5	Worm Driven Ladle	125 tons
44		125 tons
27		150 tons
2	Worm Driven Ladle	150 tons
3	Worm Driven Ladle	160 tons
2	Worm Driven Ladle	165 tons
3	Worm Driven Ladle	175 tons
26		175 tons
2		200 tons
1		225 tons
1		250 tons
1		275 tons
8		430 tons

STRIPPING CRANES

8		100 tons
1		125 tons
21		150 tons
15		200 tons
1	Single Ram, 320 tons	

COMBINATION CHARGERS AND STRIPPERS

3		100 tons
1		125 tons
3		150 tons
4		200 tons

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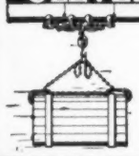

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Division of
The Cleveland Crane & Engineering Co.
Wickliffe, O.

4*

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Stronger and Built to Last Longer, Owen Buckets get "A Mouthful at Every Bite" and More Bites Per Day.

THE OWEN BUCKET CO.
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For Your Yard Work

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Made in all capacities—Overhead or Gantry—to suit individual requirements. Floor, cage or remote control.
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BEDFORD, IND.

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Multiple Punching Machines
Plate Shearing Machines
Bar Shearing Machines

Beatty Machine and Manufacturing Company
HAMMOND INDIANA

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All Bucket! "Built to Dig and Last While Digging"
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WILLIAMS

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National Tube Co., Frick Bldg., Pittsburgh, Pa.
Pittsburgh Steel Products Co., Union Trust Bldg., Pittsburgh.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tyler Tube & Pipe Co., The, Washington, Pa.
Williams & Co., Inc., 901-37 Penna Ave., Pittsburgh.

TUBES (Charcoal Iron Boiler)
Bethlehem Steel Co., Bethlehem, Pa.
Tyler Tube & Pipe Co., The, Washington, Pa.

TUBES (Cold Drawn Seamless Steel)
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Pittsburgh Steel Products Co., Union Trust Bldg., Pittsburgh.
Summerill Tubing Co., Bridgeport, Pa.
Timken Roller Bearing Co., The, Canton, O.
Ward's, Edgar T., Sons Co., (Div. Columbia Steel & Shafting Co.), Pittsburgh, Pa.
Williams & Co., Inc., 901-37 Penna Ave., Pittsburgh.

TUBES (Lap-Welded Boiler)
Bethlehem Steel Co., Bethlehem, Pa.
Tyler Tube & Pipe Co., The, Washington, Pa.

TUBES (Seamless Iron)
Babcock & Wilcox Tube Co., 85 Liberty St., New York City.

TUBES (Welded Steel)
Michigan Steel Tube Products Co., Buffalo St., Detroit, Mich.

TUBING (Seamless Steel & Lap Welded)
Williams & Co., Inc., 901-37 Penna Ave., Pittsburgh.

TURBINES (Steam)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

TURBO BLOWERS — See BLOWERS

TURNBUCKLES
Merrill Brothers, Maspeth, N. Y.

TURNTABLES
American Bridge Co., 71 Broadway, New York City.

TWIST DRILLS—See DRILLS

VALVES (Back Pressure)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

VALVES (Gas)
Bailey, Wm. M., Co., Magee Bldg., Pittsburgh, Pa.

VALVES (Gas and Air Reversing)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.

VALVES (Hydraulic)
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

VALVES (Pneumatic)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.

VALVES AND FITTINGS
Pittsburgh Piping & Equipment Co., 43rd St. & A. V. R. R., Pittsburgh, Pa.

VANADIUM
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Vanadium Corp. of America, 120 Broadway, New York City.

VIADUCTS (Steel)—See BRIDGES BUILDINGS, VIADUCTS, STACKS (Steel)

WALKAWAYS (Open Steel — See FLOORING-STEEL (Ventilating, Nonslipping, Fireproof)

WALLS (Sectional Air Cooled)
Detrick, M. H., Co., 140 S. Dearborn St., Chicago, Ill.

WAREHOUSES (Iron and Steel)
Bliss & Laughlin, Inc., Harvey, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Ryerson, Jos. T., & Son, Inc., 16th & Rockwell Sts., Chicago.
Union Drawn Steel Co., Beaver Falls, Pa.
Ward's, Edgar T., Sons Co., (Div. Columbia Steel & Shafting Co.), Pittsburgh, Pa.

WASHERS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Joliet Wrought Washer Co., Joliet, Ill.
Kantlink Manufacturers, 40 Hermon St., Newark, N. J.

WASHERS (Lock)—see LOCK WASHERS

WASHERS (Special)
Kantlink Manufacturers, 40 Hermon St., Newark, N. J.

WASHING MACHINES & SYSTEMS (Metal)
Maehler, Paul Co., The, 2210 West Lake St., Chicago, Ill.

WASHING MATERIAL (Rags)
Ford, The J. B., Co., Wyandotte, Mich.

WATER COOLERS
Frigidaire Company, The, Dayton, Ohio.

WATER COOLED EQUIPMENT (For Open Hearth Furnaces)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.

WATER FILTRATION & SOFTENING
Scaife, Wm. B., & Sons Co., Oakmont, Pa.

WATER SYSTEMS
Myers, F. E., & Brothers Co., The, Ashland, Ohio.

WAX (Core, Wire Pattern, Vent)
United Compound Co., 228 Elk St., Buffalo, N. Y.

WELDING-ARC (Consulting Engineers)
Kinkead, Robert E., 3030 Euclid Ave., Cleveland, Ohio.

WELDING (Forge & Hammer)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.

WELDING (Oxy-Acetylene, Electric, Alloy)
Blaw-Knox Co., 602 Farmers Bk. Bldg., Pittsburgh.

WELDING AND CUTTING APPARATUS AND SUPPLIES (Electric Arc)
General Electric Co., Schenectady, N. Y.
Lincoln Electric Co., The, Coit Rd. & Kirby Ave., Cleveland.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.
Williams & Co., Inc., 901-37 Penna Ave., Pittsburgh.
Wilson Welder & Metals Co., Wilson Bldg., Hoboken, N. J.

WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)
Air Reduction Sales Co., 342 Madison Ave., New York City.
International Oxygen Co., Newark, N. J.
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

WELDING AND CUTTING (Gas)
Prest-O-Lite Co., Inc., The, 30 E. 42nd St., New York City.

WELDING APPARATUS (Kerosene)
St. Paul Welding & Mfg. Co., 174 West 3rd St., St. Paul, Minn.

WELDING MACHINES (Spot-Butt-Seam-Flash)
General Welder Co., The, 95 Steiner Ave., Akron, Ohio.

WELDING FLUX (Iron, Brass Steel) See FLUX (Welding)

WELDING RODS (Tobin Bronze and Special Alloys)
American Brass Co., 25 Broadway, New York City.

WELDING RODS AND WIRE
Air Reduction Sales Co., 342 Madison Ave., New York City.
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Lincoln Electric Co., The, Coit Rd. & Kirby Ave., Cleveland, O.
Oxweld Acetylene Co., 30 E. 42nd St., New York City.
Washburn Wire Co., Phillipsdale, R. I.
Williams & Co., Inc., 901-37 Penna Ave., Pittsburgh.
Wilson Welder & Metals Co., Wilson Bldg., Hoboken, N. J.

WELDING WIRE (Gas & Electric)
Roebling's, John A., Sons Co., Trenton, N. J.

WHEELS (Car and Locomotive)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.

WINDOWS—FIRE PROOF (Hollow Metal)
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

WIRE (Annealed, Bright, Galvanized)
Bethlehem Steel Co., Bethlehem, Pa.
Pittsburgh Steel Co., P. O. Box 72, Pittsburgh, Pa.
Seneca Wire & Mfg. Co., The, Fostoria, O.

WIRE (Fence)
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Pittsburgh Steel Co., P. O. Box 72, Pittsburgh, Pa.

WIRE (Music)
Washburn Wire Co., Inc., 118th & Harlem River, New York City.

WIRE (Round, Flat, Square and Special Shapes)
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Ludlum Steel Co., Watervliet, N. Y.
Roebling's, John A., Sons Co., Trenton, N. J.
Seneca Wire & Mfg. Co., The, Fostoria, O.
Washburn Wire Co., Inc., 118th & Harlem River, New York City.
Wheeling Steel Corp., Wheeling, W. Va.,

WIRE (Threaded)
Progressive Mfg. Co., Torrington, Conn.

WIRE (Welding)—See WELDING RODS

WIRE CLOTH
Cleveland Wire Cloth & Mfg. Co., 3571 E. 78th St., Cleveland, O.
Seneca Wire & Mfg. Co., The, Fostoria, O.

WIRE FORMING MACHINERY
Nilson, A. H., Machine Co., Bridgeport, Conn.

WIRE FORMS
American Spring & Mfg. Co., Elm St., Holly, Mich.

WIRE MILL EQUIPMENT
Hallden Machine Co., Thomaston, Conn.
Morgan Construction Co., Worcester, Mass.
Shuster, The F. B., Co., New Haven, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.
Vaughn Machinery Co., Cuyahoga Falls, O.

WIRE NAIL MACHINERY
Bliss, E. W., Co., 53rd St., Brooklyn, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.

WIRE NAILS—See NAILS

WIRE REELS
Nilson, A. H., Machine Co., Bridgeport, Conn.

WIRE ROPE AND FITTINGS
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Roebling's, John A., Sons Co., Trenton, N. J.

WIRE ROPE SLINGS
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Roebling's, John A., Sons Co., Trenton, N. J.

WIRE STRAIGHTENERS
Nilson, A. H., Machine Co., Bridgeport, Conn.

WIRE STRAIGHTENERS AND CUTTING MACHINES
Hallden Machine Co., Thomaston, Conn.
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Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.

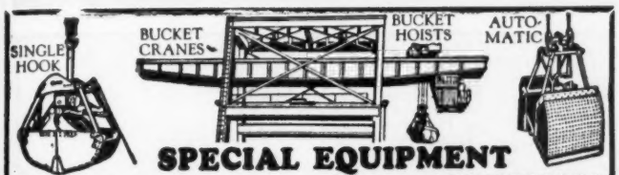
See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

Sturdy and Efficient

Roeper Type "R" Electric Hoist

Standard motor with single shaft extension; light in weight, strong and powerful; automatic stop; worm drive and one piece frame. Made in capacities 500 to 4000 lbs. Send for circular.

ROEPER CRANE & HOIST WORKS, Inc.
1729 North Tenth St. READING, PA.
Member of Electric Hoist Manufacturers Association



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One of the Pioneer Crane Builders ~ Established 1878
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Milwaukee Wisconsin
Representatives in principal cities.

The most complete line of Cranes and Hoists in America
FROM ½ TON to 450 TON CAPACITY
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Schuyler Avenue, Montour Falls, N.Y.

P&H
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HARNISCHFEGER CORPORATION
Established 1884
Crane and Hoist Division
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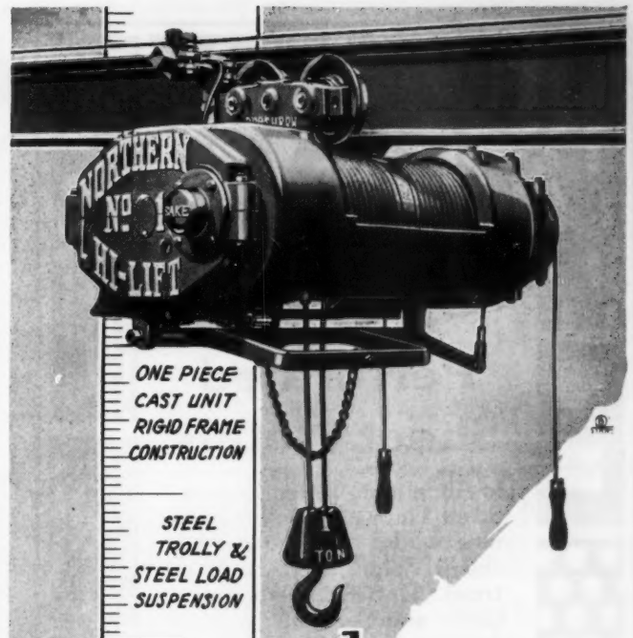
Ohio LIFTING MAGNETS
are long lived
All insulation is Asbestos. They have maximum lifting capacity. Outer pole has no through holes; it does not loosen, wears slowly and seldom breaks.
The Ohio Electric & Controller Co.
5906 Maurice Ave., Cleveland, Ohio



ONE PIECE CAST UNIT RIGID FRAME CONSTRUCTION

STEEL TROLLY & STEEL LOAD SUSPENSION

STANDARD HOIST MOTOR, MOUNTED HORIZONTALLY

ALL GEARS OF FORGED STEEL AND HARDENED

UPPER AND LOWER LIMIT STOP

ROLLER BEARINGS THROUGHOUT

GEARS AND BEARINGS RUN IN A GREASE BATH

EXCEPTIONALLY ACCESSIBLE

ADJUSTABLE TROLLEY

LOW HEAD ROOM, HIGH LIFT.

When Measured by the Scale of Construction Features and Performance

It is Way Up there at the Top

the **NORTHERN HI-LIFT ELECTRIC HOIST**

Send Northern your Inquiries and secure their Exclusive Features

Send for Bulletin EH-105 N

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DETROIT, MICH.
Offices in all Principal Cities
CANADIAN MFGRS. OF NORTHERN CRANES & HOISTS
NORTHERN CRANE WORKS, LTD.
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MEMBER OF THE ELECTRIC HOIST MANUFACTURERS ASSOCIATION

6

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Perforated Sheet Metals

in Aluminum, Brass, Copper, Steel, Tin, Zinc, etc. for Fanning Mills, Threshing Machines, Pulp Machinery, Electrical Devices, Ventilators, Grills, and Coal and Mining Screens of all descriptions. Write for booklet.

ERDLE
Perforating Co.
Rochester New York

Perforated Metals

For screens, Centrifugal Linings, FilterPressPlates and other uses. Any metal, any size, any perforation.

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HARRINGTON & KING
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PERFORATED METALS
Perforations Plain and Ornamental
All kinds and thicknesses of metal

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Electroforged One-Piece, Non-Slip
Open Steel Flooring and Steps

BLAW-KNOX

Perforated Metals
SCREENS OF ALL KINDS
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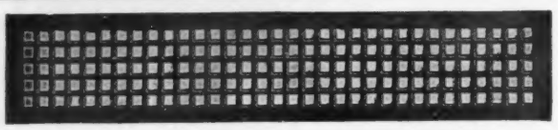
Tel. Canal 1459 CHICAGO, ILL.



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Dealers Send for No. 26 Catalogue
The AUER REGISTER CO., Cleveland, Ohio

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JOLIET WROUGHT WASHER CO.
JOLIET, ILLINOIS

STANDARD WASHERS SPECIAL WASHERS

Perforated Metal Screens

any gauge plate
any size opening
any curvature to the plate

Also elevator buckets of all types, flights and troughs, stacks and tanks and similar equipment.

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Makers of Mitco Interlocked Steel Floor Grating, Mitco Shur-Site Stair Treads and Mitco Armorgrids.
Elevator Buckets of all Types

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Our entire efforts during the past thirty-three years have been devoted exclusively to Sheet Metal Stamping.

Send your inquiries to us

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Chicago Office: 1646 Transportation Bldg.
Philadelphia Office: 206 City Center Bldg.
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Section M-41

Furnished to the following dimensions:

Thickness—$\frac{3}{16}$″ to ¼″ exclusive of raised figure.
Weight —8.8 to 31.7 pounds per square foot.
Width —6″ to 72″.
Length —240″ maximum for all gauges and widths.

This design drains and cleans readily and is recommended for all service where a safe footing is required.

Illinois Steel Company

Subsidiary of UNITED STATES STEEL CORPORATION

General Offices: 208 South La Salle Street, Chicago, Illinois

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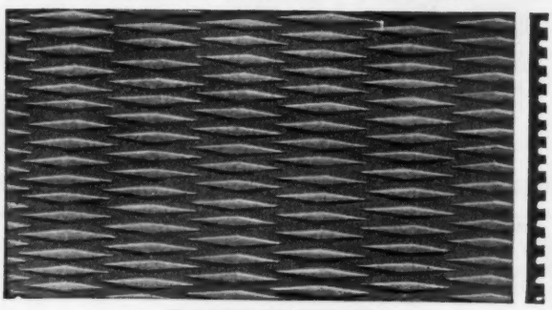
Rolled Steel *"NEVERSLIP"* Floor Plates



RAISED DIAMOND
DIAMOND and Ribbed Pattern

AMERICAN PRESSED STEEL CO.
PHILADELPHIA, PA.
The original diamond pattern floorplate.

ATASCO
HOT AND COLD ROLLED STEEL

AMERICAN TUBE AND STAMPING PLANT
THE STANLEY WORKS
BRIDGEPORT, CONN.

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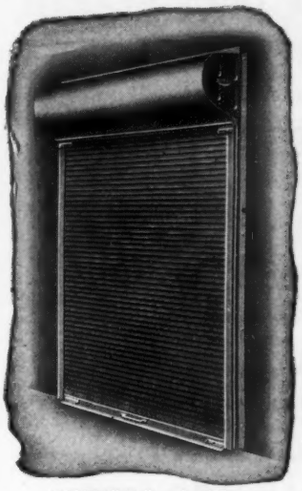
Chicago: A. L. Seaman & Co., 549 W. Washington Street
Cleveland: F. H. Grace & Co., 507 Hunkin-Conkey Bldg.
The American Rolling Mills Co. of California
The American Castile Co., Los Angeles, Cal.

DOORS } ROLLING STEEL



"MECCO" Rolling Steel Door

Specifications Furnished

Fire Proof

No Repairs

Convenient

Manual—
Chain—
Crank—
Motor
Operation

We also manufacture every type of Hollow Metal Windows, Tin Clad and Kalamein Doors.

THE MOESCHL - EDWARDS CORRUGATING COMPANY, Inc.
P. O. Box 564 CINCINNATI, OHIO Dept. I

QUICKSHIPPERS

AUTOMOBILE
FULL PICKLED

METAL FURNITURE
SINGLE PICKLED

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NEWTON FALLS, OHIO

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BOILER TUBES PIPE ASCOLOY
ALLEGHENY METAL

Allegheny

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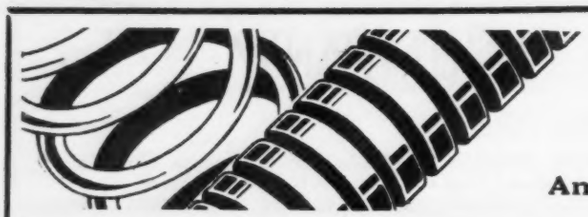

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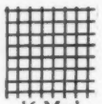
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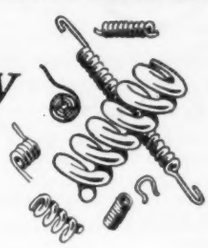

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by
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Middletown, Ohio.

Castings

CONNECTICUT

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HIGBEE FOUNDRY CO., Aurora. Gray iron, semi-steel to 10,000 lbs.

WANNER MALLEABLE CASTINGS CO., Quality Malleable Castings. Carefully finished. Pattern Shop Works, Hammond, Ind.; Beloit, Wis.

INDIANA

BASS FOUNDRY & MACHINE CO., Fort Wayne. Gray Iron, Chilled Iron and Semisteel Castings. Pattern and Machine Work.

MARION MACHINE, FOUNDRY & SUPPLY CO., Marion. Gray iron, semi-steel up to 20,000 lbs. Building specialties; pattern and machine work.

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IOWA

DAVENPORT MACHINE & FOUNDRY CO., Davenport. Heavy gray iron and semi-steel to ten tons. Mfgrs. of "Davenport" Molding Machines.

MICHIGAN

ENTERPRISE BRASS WORKS, Muskegon. Bronze and aluminum castings. Plumbers brass goods.

LAKE SHORE ENGINE WORKS, Marquette. Gray iron castings up to fifteen tons. Patternshop and machine shop.

PREMIER WARM AIR HEATER CO., Dowagiac. Quality castings, both light and medium, gray iron or semi-steel, made to your specifications. Write us.

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Castings

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BUFFALO FOUNDRY & MACHINE CO., Buffalo, Gray iron, semi-steel and special mixture castings, 1 to 200 tons. Pattern and machine shop.

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THE AMERICAN CRUCIBLE PRODUCTS CO., Lorain. Brass, bronze and aluminum castings. Machined parts. Mill brasses a specialty.

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QUAKER CITY FOUNDRY, INC., Salem. Light and medium weight Gray Iron or Semi-steel. Machine or hand molded, tumbled or sand blasted.

THE WEST STEEL CASTING CO., Cleveland. High grade light work steel castings, 1 to 500 lbs. Quality work desired. Qual. and service guaranteed.

PENNSYLVANIA

AMERICAN ENGINEERING CO., Philadelphia. Aramingo & Cumberland Sts. Gray iron and semi-steel from 1 to 24,000 lbs. Long and varied experience.

DAVIES & THOMAS CO., Catasauqua, (N. Y. Office, 342 Madison Ave.) Gray iron up to 10,000 lbs. Complete machine and pattern shops.

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TAYLOR-WILSON MANUFACTURING CO., McKees Rocks. Gray iron to 10 tons. Semi-steel. Machine molded gears. Machine and pattern shops.

Castings

PENNSYLVANIA

TREADWELL ENGINEERING CO., Easton. Iron castings to 35 tons. Electric steel castings to 5,000 lbs. Complete machining facilities.

UNION SPRING MANUFACTURING CO., New Kensington. Electric steel castings. Manganese steel castings a specialty. Alloy castings.

WISCONSIN

WANNER MALLEABLE CASTINGS CO., Quality Malleable Castings. Carefully finished. Pattern Shop. Works, Hammond, Ind.; Beloit, Wis.

Forgings

OHIO

AMERICAN FORGE & MACHINE CO., Canton. Drop and drawn forgings. Machining and heat treating. Hot dip galvanizing.

Stampings

ILLINOIS

JOLIET WROUGHT WASHER CO., Joliet. Standard washers and riveting burrs. Special washers. Steel stampings.

MASSACHUSETTS

LARSON TOOL & STAMPING CO., Attleboro, 501 Olive St. Medium and light stampings, all metals, complete assemblies. Single pieces or carloads.

MICHIGAN

LANSING STAMPING CO., Lansing. Heavy medium and light metal stampings. Send blue prints for samples for estimate.

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Now!

Silvery MAYARI

Microphotograph, (100 diameters) of a section of a casting made without Mayari, showing the long flakes of graphite.

Microphotograph, (100 diameters) of a section of a casting in which the new Silvery Mayari Pig Iron was used, showing the elimination of the graphite flakes which are now in the nodular form.

SILVERY MAYARI is an extremely low-carbon, machine-cast pig iron, with a high silicon and manganese content, and with a low phosphorus content. It is now being produced by Bethlehem Steel Company as the result of developments in the search for an iron which would make castings of increased strength and with greater grain density, but without undue hardness, and be adaptable at moderate cost to the production of high-test castings.

Like standard Mayari Pig Iron, Silvery Mayari imparts to castings increased strength, clean, smooth surfaces, close and tough grain, reduction of spongy spots and segregation, and long life when subject to heat and wear. Silvery Mayari not only imparts these qualities to castings, but, due to its low total carbon and high silicon and manganese contents, allows the use of sufficient steel scrap to produce a high-test cast iron without expert control.

The uniformly close grain structure—the result of eliminating the graphite flakes, which are now in the nodular form, and the direct opposite to graphitization—is clearly shown by the microphotographs on the left. The upper is a microphotograph of a section of a casting made without Mayari, while the lower is a section of a similar casting made from a mixture to which a small percentage of Silvery Mayari had been added in the cupola.

Send for Booklet 54 which fully describes Silvery Mayari, its application and uses.

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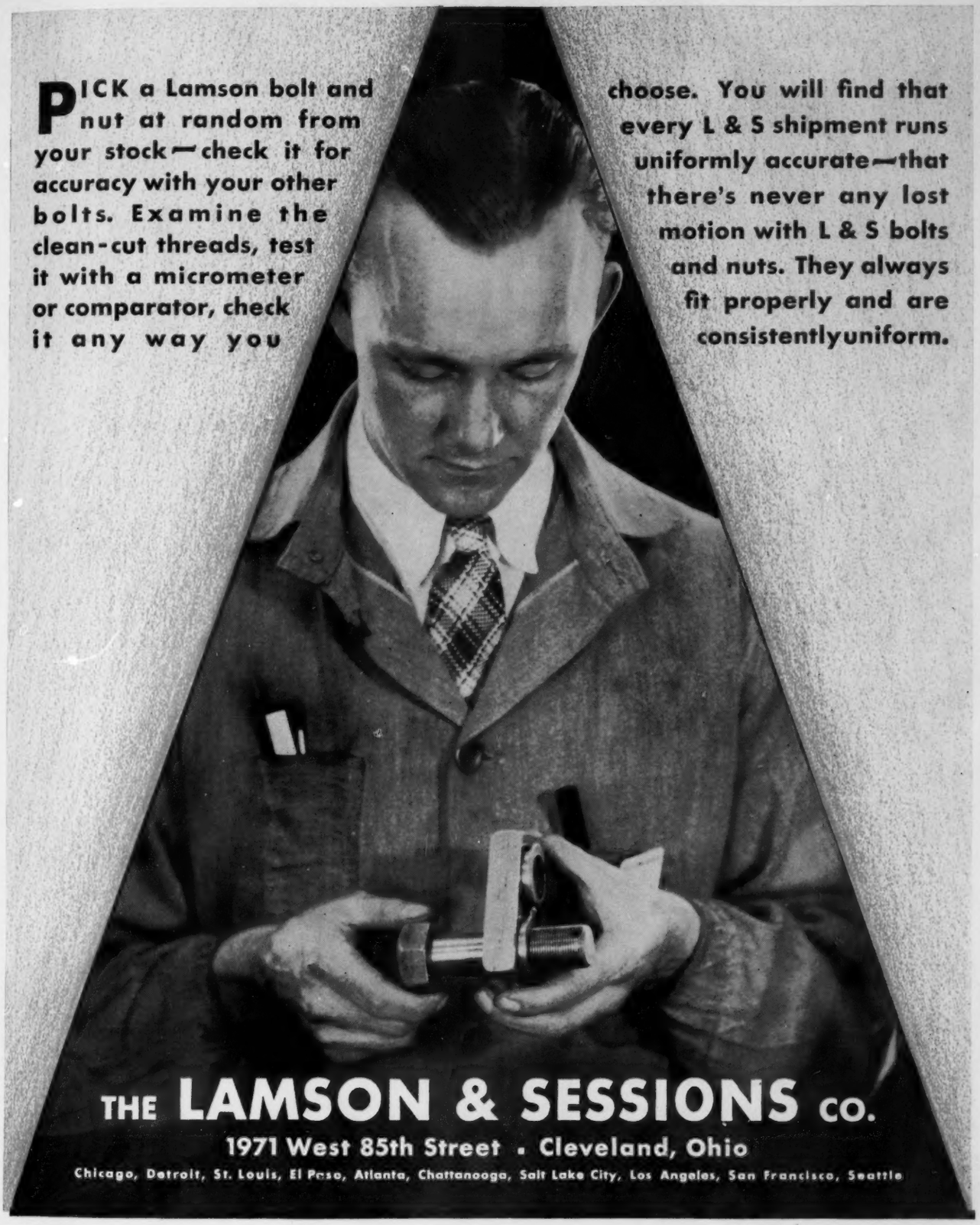
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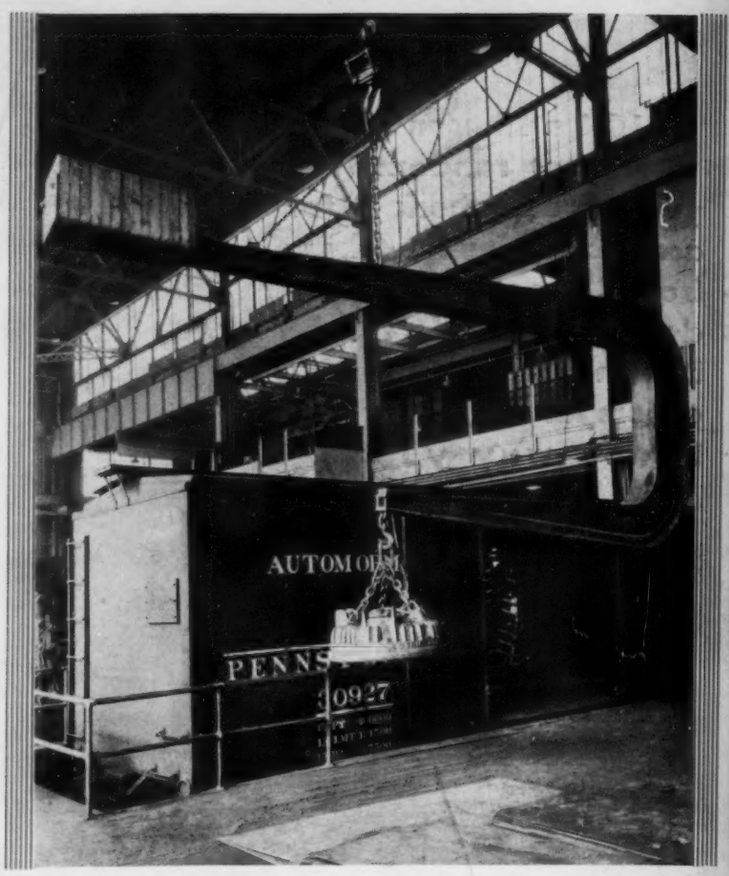

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